

Matter Number 16-00681, In the Matter of the Clean Energy Fund  
Investment Plan

Clean Energy Fund:  
**Multi-Sector Solutions Chapter**

Portfolio: Market Development

**Submitted by:**

The New York State Energy Research and Development Authority

Revised September 17, 2021

Clean Energy Fund: Multi-Sector Solutions Chapter		
Revision Date	Description of Changes	Revision on Page(s)
June 23, 2017	Original Issue	Original Issue
September 15, 2017	Added the Technical Services initiative.	Multiple
November 1, 2017	Added Clean Energy Advanced Market Performance (AMP) Challenge and Clean Energy Siting & Soft Cost Reduction initiatives.	Multiple
August 17, 2018	Added Pay for Performance Initiative	Multiple
March 29, 2019	<u>Clean Energy Advanced Market Performance (AMP) Challenge</u> : Renamed initiative to Commercial and Industrial Carbon Challenge (CICC) <u>CICC</u> - Increased budget based on positive market response and return on investment in first round; Revised tables 13, 14, 15, 16, and 17 to reflect revised values of budgets and benefits associated with additional funding.	Multiple
April 19, 2019	Added RetrofitNY - Market Rate initiative.  <u>Technical Services</u> : Renamed initiative to Aggregated Technical Services and updated milestones; <u>Information Products and Brokering</u> : Moved into this chapter (from original location within own Info Products Chapter) without any substantive changes. <u>Clean Energy Siting</u> : Section 21.4 includes minor revisions to clarify technology focus, update milestones, and update output indicator targets (in Appendix C).  As part of the Annual Investment Plan & Performance Report (IPPR) process, NYSERDA has updated budget and benefit values to align with actuals for past years and adjusted budget and benefit forecasts for future years, as appropriate, based on experience to date. Budget and benefit tables have been moved to Appendix B of this chapter and output/outcome tables have been moved to Appendix C of this chapter. Updated rounding convention has been applied to budget and benefit tables.	Multiple
June 6, 2019	<u>Aggregated Technical Services</u> : Reverted name to Technical Services <u>RetrofitNY - Market Rate</u> : Removed the RetrofitNY - Market rate initiative which has not yet been approved and is being refined by NYSERDA.	Multiple
September 13, 2019	Added Consumer Awareness initiative.	Multiple
February 10, 2020	Removal of Energy Efficiency Soft Cost Challenge Initiative	Multiple
May 15, 2020	As part of the Annual Investment Plan & Performance Report (IPPR) process, NYSERDA has updated budget and benefit values to align with actuals for past years and adjusted budget and benefit forecasts for future years, as appropriate, based on experience to date.	Multiple within including Appendix B, Appendix C

	<p>The initiative previously approved as “C&amp;I Carbon Challenge” has been expanded to encompass a new sub-component called “Empire Building Challenge” which is aimed at supporting the broader NY Clean Heat Market Development Plan. Subsequently, this initiative has been renamed “Market Challenges”.</p> <p>Consumer Awareness initiative has been rescoped to coincide with a similar effort being undertaken in support of the NY Clean Heat effort; the plan contained here will no longer have a statewide focus. Appendix B budget has been reduced.</p> <p>Technical Services has been revised – funding added to continue Commercial sector support; funding added to expand support for Multifamily sector; Appendix C updated to incorporate additional outputs/outcomes targets.</p>	
June 5, 2020	Chapter was recently updated and is being refiled here as part of the Annual Investment Plan & Performance Report (IPPR) process to update Information Products and Brokering plans. All other investment plans within the Chapter were previously updated with the 5/15/20 filing.	Verified Gross Savings Specifications, Appendix B & C
July 15, 2020	Clean Energy Siting & Soft Cost Reduction has been revised - Added activities to the Clean Energy Siting & Soft Cost Reduction initiative to support the initial launch of the Build Ready program, in accordance with the Accelerated Renewable Energy Growth and Community Benefit Act.	Multiple
May 3, 2021	<p>As part of the Annual Investment Plan &amp; Performance Report (IPPR) process, NYSERDA has updated budget and benefit values to align with actuals for past years and adjusted budget and benefit forecasts for future years, as appropriate, based on experience to date.</p> <p>All investment plans within this chapter have been updated to provide a bridge between committed and acquired planning. Committed budget and benefits summaries have been added to plan text, while Appendix B has been updated to reflect expenditure &amp; acquired benefits plans.</p>	<p>Appendix B</p> <p>12-13, 20-21, 32, 41, 50-51, 59, Appendix B</p>
September 17, 2021	Technical Services has been revised. Funding has been added to continue supporting Commercial and Multifamily sector efforts. Appendices B and C have updated benefits and outputs/outcomes.	Appendix B & C

## 21 Multi-Sector Solutions

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NYSERDA is supporting the development and deployment of clean and renewable sources of energy, a more efficient and responsive grid, and more energy efficient buildings. The initiatives in this chapter will address cross-cutting barriers and opportunities that are not specific to one market sector, including providing technical assistance and increasing confidence in clean energy solutions.

The first initiative described is Technical Services. The initiative will engage consultants and customers in exploring approaches to providing and receiving clean energy recommendations through technical analysis. The strategy builds on NYSERDA's reputation as a source of objective and credible technical advice and information, while also catalyzing private market actors to take advantage of this market opportunity. Aggregated Technical Services will implement pilots to demonstrate the benefits of investing in energy management, increase knowledge, expertise, and confidence in clean energy approaches and technologies, and demonstrate new cost-effective and replicable approaches to clean energy projects. The initiative will also identify and distribute best practices and continue to provide site-specific assessments through the FlexTech program. Previously filed initiatives have included sector and initiative specific technical services, but this initiative combines similar activities across sectors under one umbrella initiative.

The second initiative described in this chapter is Market Challenges. The objective of the strategy is to increase the level of private investment in clean energy in New York State by large energy users through funding pilot projects that either provide a streamlined and cost-effective manner for large energy users to reduce greenhouse gas emissions or address a difficult-to-decarbonize energy use through a project that has potential for replicability and scale.

The third initiative described is the Clean Energy Siting & Soft Cost Reduction initiative. Its objective is to reduce market barriers inhibiting the deployment of clean energy technologies.

The fourth initiative described in this chapter, Pay for Performance is designed to promote a performance-based structure, where the risk of underperformance is borne by an energy service provider, and the end use customer receives guaranteed, lower cost of energy with little or no money down.

The fifth initiative described in this chapter, Information Products and Brokering, provides a platform to develop information tools and resources needed to increase customer demand and adoption of energy efficiency and clean energy solutions. Creating tools that can work across technologies and market sectors, this initiative will increase customer demand for energy efficiency and reduce customer acquisition costs for energy efficiency solution providers. This initiative also supports the Data Asset Pilots and the DER Data Platform pilot required by recent Commission Orders. Web-based tools and solutions have already transformed consumer markets, including real estate and automobiles, by informing and matching potential customers with products and services that meet their needs through identifying options, simplifying comparison shopping, and improving customer confidence in making a purchase. Similar tools also have the potential to transform the

energy market by providing similar services to end-user customers, increasing demand by providing tailored estimates of the value of energy efficiency and clean energy investments, including both energy and non-energy benefits. Tools also have the potential to lower customer acquisition costs by enabling solution providers to target customers that present better sales opportunities. However, developers of these tools and solutions have not yet seen a clear profit incentive to focus on energy efficiency and clean energy technologies. The 2015 State Energy Plan (SEP) identifies buildings as a major source of energy use and greenhouse gas (GHG) emissions in the State. The Information Products and Brokering strategy will reduce energy consumption and GHG emissions associated with buildings, contributing to State Energy Plan goals to reduce GHG emissions by 40% and to implement a 600 trillion BTU increase in statewide energy efficiency. This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by both stimulating the transition away from petroleum-fueled products; and reducing the overall electric load, and therefore the number of renewables necessary to meet the 50 by 30 goal.

The sixth initiative described in this chapter, Consumer Awareness, works across sectors to increase consumer awareness, familiarity, and demand for clean heating and cooling and energy efficiency technologies. The program supports attainment of the NYS SEP goals to reduce GHG emissions through increasing awareness and consideration of energy efficiency and clean heating and cooling technologies. The program will reinforce and expand the reach of other NYSERDA, NYPA and utility programs to maximize the benefits of these technologies in natural gas constrained areas.

# Technical Services

## 21.1.1 Overview<sup>1</sup>

<p><b>Present Situation</b></p>	<ul style="list-style-type: none"> <li>• Despite the benefits of clean energy technologies, including energy efficiency, demand response, and renewable energy, end-users can be reluctant to make investments due to not fully understanding their energy-related needs, or the risks and opportunities associated with clean energy technologies. While there are energy focused firms that can assist with gaining this understanding, end-users are uncertain of contractor and firm qualifications, or the best approach to procure and engage in clean energy projects.</li> <li>• To address these barriers, NYSERDA currently offers the Flexible Technical Assistance (FlexTech) Program, approved in the Resource Acquisition Transition Chapter through 2019. FlexTech also provides farm energy audits through the Agriculture Energy Audit Program, also approved in the Resource Acquisition Transition Chapter through 2018. FlexTech has been successful at driving clean energy installations; to date the program has a measure adoption rate of 65% and has met or exceeded both its System Benefits Charge and Energy Efficiency Portfolio Standard savings goals. To maintain this success, there is a continued need to provide the reliable, objective, technical assessments of clean energy options that FlexTech offers. New York’s investor owned utilities have discontinued or reduced their study assistance programs and are coordinating with NYSERDA to direct the marketplace to FlexTech.</li> <li>• While FlexTech has been a valuable tool in increasing clean energy installations, and is expected to continue, it is limited in its ability to drive the scale required to meet New York State’s clean energy goals. To supplement this foundational approach, NYSERDA will explore other opportunities to drive greater scale and pace of installations. The pilots described herein are expected to decrease participation in the FlexTech Program as new approaches gain greater market traction.</li> <li>• The Industrial Chapter contains similar pilots and activities that this Plan intends to explore in non-industrial sectors. As example, the Industrial On-Site Energy Manager pilot was approved for a second round in the Industrial Chapter in July 2017. This Plan includes the launch and expansion of that effort to additional sectors.</li> </ul>
<p><b>Intervention Strategy</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA will engage consultants and customers in exploring alternatives to site-specific cost-shared energy studies to advance clean energy installations. The strategy builds on NYSERDA’s reputation as a source of objective and credible technical advice and information, while also catalyzing private market actors through the following activities:             <ul style="list-style-type: none"> <li>○ Implement pilots to demonstrate the benefits of investing in energy management, increase knowledge, expertise, and confidence in clean energy approaches and technologies, and demonstrate new cost-effective and replicable approaches to clean energy projects.</li> <li>○ Identify and distribute best practices to various market actors, such as farm management best practices to the agriculture sector and feasibility study scope of work development best practices.</li> </ul> </li> </ul>

<sup>1</sup> Except where otherwise detailed this initiative lays out barriers, goals and activities that are applicable to the commercial, industrial (including agriculture), and residential and multifamily sectors.

	<ul style="list-style-type: none"> <li>• NYSERDA will also continue to provide site-specific assessments to drive clean energy adoption through its successful FlexTech Program.</li> <li>• For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: Technical Services,” which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<ul style="list-style-type: none"> <li>• Build the clean energy and energy management capacity, capability, and interest of consultants, energy service companies, and other energy-focused firms to serve the market and provide objective and credible guidance.</li> <li>• Prove the efficacy of the pilots and approaches listed herein through participation rates.</li> <li>• Stimulate demand for and investment in clean energy improvements by end-users.</li> <li>• Increase the rate at which clean energy technologies are identified through studies or best practices.</li> </ul>
<b>State Energy Plan/ Clean Energy Standard Link</b>	<ul style="list-style-type: none"> <li>• The 2015 State Energy Plan identifies buildings as a major source of energy use and greenhouse gas (GHG) emissions in the State. This strategy will reduce energy consumption and GHG emissions associated with buildings, both as a function of how buildings are operated and the efficiency of the installed equipment, contributing to State Energy Plan goals to reduce GHG emissions by 40% and to implement a 600 trillion BTU increase in statewide energy efficiency.</li> <li>• This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal.</li> </ul>

21.1.2 Target Market Characterization

<b>Target Market</b>	<ul style="list-style-type: none"> <li>• The target market includes firms that provide energy services, such as consultants, energy service companies, developers, and vendors who will be able to serve end-users within and across multiple market sectors, including commercial, industrial, agriculture, multifamily and single family residential.</li> <li>• End users served by the programs and pilots including all commercial facilities (i.e. hospitals, colleges, commercial office space, retail, etc.), industrial facilities, data centers, agriculture facilities (i.e. dairy farms, greenhouses, vegetable farms and vineyards), and multifamily and residential dwellings.</li> </ul>
<b>Market Participants</b>	<p>Market participants include:</p> <ul style="list-style-type: none"> <li>• Energy-focused firms such as consultants, energy auditors, energy service companies, developers and vendors. Building owners, managers, and facility operators</li> <li>• Professional and industry associations as applicable to each sector (i.e., Manufacturers Association of Central New York (MACNY), New York State Department of Agriculture and Markets, etc.)</li> <li>• New York State investor-owned utilities</li> <li>• Trade Associations</li> <li>• End users served by the programs and pilots including all commercial facilities (i.e., hospitals, colleges, commercial office space, retail, etc.), industrial facilities, data centers, agriculture facilities (i.e. dairy farms, greenhouses, vegetable farms and vineyards), and multifamily and residential dwellings.</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>• NYSERDA FlexTech Consultants have indicated that they are open to new opportunities and approaches beyond engaging end users in cost-shared assessments, with the goal to increase end user confidence and reduce end user</li> </ul>

	<p>reluctance to invest in clean energy. Other energy focused firm beyond those already working in FlexTech will also be engaged to test out new approaches.</p> <ul style="list-style-type: none"> <li>• Both end users and energy-focused firms have expressed interest in partnering with NYSERDA to help demonstrate and de-risk alternate mechanisms to identifying clean energy opportunities, such as on-site energy manager support and aggregated models. NYSERDA has been identified as the objective, trusted source for distributing this information.</li> <li>• End users have indicated that providing unbiased information, case studies and illustrating energy efficiency opportunities for their sector through a variety of trusted forms and approaches would provide assurance to pursue energy improvements.</li> <li>• Other states, including neighboring Connecticut and Massachusetts, have compiled and distributed best practice guides and have indicated success in engaging the businesses with energy efficiency and renewable opportunities.</li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>• End users will benefit from the energy and cost savings associated with installed measures identified by energy-focused firms.</li> <li>• End users will be able to leverage the benefits of their clean energy investigations by applying the knowledge and operating methodologies learned from the initial information across their portfolios.</li> <li>• Identification of qualified energy-focused consultants to participate in pilots and serve customers engaging in pilots or cost-shared energy assessments will reduce customer procurement time and costs, as well as improve public perception of these firms and increase the visibility of actionable clean energy opportunities across multiple sectors.</li> </ul>

21.1.3 Stakeholder/Market Engagement

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• NYSERDA has conducted in-person meetings and webinars with end users and energy-focused firms to gather feedback on existing programs, publicly available information, and proposed pilots in this plan. Calls and meetings with FlexTech Consultants and commercial end-users confirmed interest in activities such as on-site energy manager and testing of new aggregation models.</li> <li>• Specific to the agriculture sector, through the Clean Energy Agriculture Task Force, Farm Management Best Practices working group, NYSERDA has investigated and obtained marketplace feedback confirming the value of a best practices guide to assist farms in improving energy efficiency decisions.</li> <li>• As this initiative is implemented, NYSERDA will continue engagement with industry experts and New York stakeholders to review progress and help guide the evolution of strategy to maximize impact, including soliciting suggestions for improving results and NYSERDA's role.</li> </ul>
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### 21.1.4 Theory of Change

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>Lack of Information.</b> Lack of information and understanding of the energy and non-energy benefits of clean energy improvements limits the likelihood that end users will pursue projects. This creates an opportunity for NYSERDA to develop and disseminate relevant information to encourage the adoption of clean energy.</li> <li>• <b>Competing Priorities.</b> Lack of consideration of clean energy opportunities, given other priorities when it comes to day-to-day management and operation of facilities, which limits potential energy savings from being identified and pursued. NYSERDA can highlight the positive impact of clean energy opportunities through engaging end-users in various pilots.</li> <li>• <b>General Market Uncertainty.</b> Uncertainty of the best approach to procure and engage in clean energy projects is a barrier to end users moving forward on a project. Qualifying and vetting energy-focused firms and studies will increase consumer confidence and subsequently increase clean energy adoption.</li> <li>• <b>Site specificity.</b> Individual site assessments are frequently required to adequately align end user needs and financial ability with potential projects. These individual site assessments are a costlier method of achieving clean energy adoption. Customer acquisition and project identification costs may be reduced through aggregated business approaches, such as paying a fixed dollar amount per kWh or MMBtu of savings recommended, or a fixed dollar amount per end user that implements a minimum level of CO2 reduction, to achieve clean energy adoption at greater scale.</li> <li>• <b>Seasonality.</b> The timeframe to provide information to make energy efficiency improvements often competes with other priorities. For example, working with the agricultural community and leveraging the opportune times around harvesting times or for colleges and universities around semester start and end times.</li> <li>• <b>Lack of comprehensive energy efficiency resource and information.</b> By compiling information into easy to follow best practices, this initiative will make the process of learning about energy efficiency options easier and more effective.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If NYSERDA technical services, such as support of new aggregation models, decrease customer acquisition and project identification costs, then the likelihood of clean energy projects moving forward will increase.</li> <li>• If end-users are provided technical and information resources, then they will have greater confidence in and improved understanding of the value of clean energy projects, leading to a greater number of projects being implemented.</li> <li>• If a customer is presented with a plan demonstrating potential energy savings, incremental project costs, and return on investment, then they will be motivated to choose energy efficient options, change behaviors and culture.</li> <li>• If case studies and testimonials from key market actors are developed, then peers will have more confidence in the savings and will replicate energy efficient design and change behaviors and culture. Existing programs, such as FlexTech, do not offer case studies or peer sharing.</li> </ul>
<p><b>Activities</b></p>	<p>NYSERDA will engage in targeted pilots and studies to develop and standardize methods, as appropriate, to optimize the identification and presentation of clean energy opportunities, with continued support for qualified consultants, training, and guidance. When administering the pilots and studies, NYSERDA will structure the offerings to best serve the end user or sector.</p> <p>NYSERDA will qualify consultants to provide the services as needed. This is currently administered by qualifying FlexTech Consultants through an open</p>

	<p>enrollment solicitation. NYSERDA will continue to assess whether all the expertise and qualifications needed to support each pilot are being provided through the open enrollment solicitation, and modify the process if needed.</p> <p><b><u>Pilot Activities</u></b></p> <p>NYSERDA will fund pilots that engage the energy consultant community through means other than cost-shared energy assessments to demonstrate the benefits of continuously investing in clean energy and energy management. The pilots will also engage end-users to demonstrate and prove the benefits of clean energy implementation through the alternative approaches.</p> <p>The pilots are expected to be market testing efforts. Once a pilot proves a successful approach to reaching scale and delivering energy savings, NYSERDA would issue a larger scale effort such as an open enrollment or competitive RFP. At that time, NYSERDA will examine if additional funds are needed and revise this initiative to increase the budget and benefits as needed.</p> <p>Initially, NYSERDA will issue a solicitation for an on-site energy manager pilot, in coordination with NYSERDA efforts outlined in the Industrial Chapter.</p> <ul style="list-style-type: none"> <li>• The on-site energy manager pilot will provide energy management support through the engagement of existing on-site staff, contracted staff, new staff, or a hybrid approach. These staff will inform efficient day-to-day operation and longer-term capital planning of their facility(ies). Regardless of the staff leading the effort, the pilot will train and educate facility and energy managers to ensure transfer of knowledge from consultant to facility.</li> <li>• The pilot will target larger entities (e.g., colleges and universities, healthcare facilities); however, the offering will be open to facilities of all sectors and sizes. Note: the savings and impacts from industrial facilities appear in the Industrial Chapter while non-industrial facilities are accounted for under this Technical Services initiative.</li> <li>• For smaller facilities, one potential approach to explore is the efficacy of procuring energy management services for a combination of smaller facilities. In this instance, the applicant may be required to supply additional documentation to demonstrate how they would be able to coordinate, track, and effectively provide energy management activities across multiple facilities.</li> </ul> <p>NYSERDA will also explore other technical services pilot opportunities, such as the opportunities identified below. NYSERDA will also consider additional pilots as new ideas emerge.<sup>2</sup></p> <ul style="list-style-type: none"> <li>• <i>New Aggregation Models.</i> NYSERDA will explore other opportunities for ways to reduce customer acquisition and project identification costs and provide technical services beyond site-specific energy studies, such as providing the services for an aggregation of sites. This will improve the predictability of returns from investments for end users by providing replicable approaches and assessment tools. To reduce the energy focused firms risk of piloting different customer acquisition and engagement approaches, NYSERDA will reward successful approaches by paying for the results (for example paying a fixed</li> </ul>
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<sup>2</sup>Based on the results of initial solicitations, NYSERDA may revise the pilots included in this initiative to add additional pilots, run multiple rounds of the same pilot, or remove efforts that the market indicates are not necessary. NYSERDA will update the initiative if additional funding is needed or anticipated benefits are changed.

	<p>dollar amount per kWh or MMBtu of savings recommended, or fixed dollar amount per end user that implements a minimum level of CO2 reduction).</p> <ul style="list-style-type: none"> <li>• <i>Technical Review Services.</i> There is a market need for independent advisement, quality assurance, and validation of the findings of energy studies. NYSERDA will explore providing technical review for projects that do not receive cost-shared energy assessments that meet specific requirements for review. These requirements may include a willingness to provide copies of the scope of work, methodology, assumptions, and calculations.</li> </ul> <p><b><u>Studies</u></b></p> <p>NYSERDA will continue the FlexTech Program, which provides site-specific clean energy recommendations to improve the sites operations, align future investment opportunities, and prioritize those investments. NYSERDA will deliver sector specific approaches as necessary to achieve goals and serve the marketplace.</p> <p><b><u>Best Practices</u></b></p> <p>NYSERDA will also engage in the development of information, tools, and resources to demonstrate the benefits of clean energy investments and energy management. There is currently a lack of awareness among end-use customers on how to engage consultants, understand potential clean energy opportunities, and how to interpret the results and outcomes of energy studies. To overcome this awareness barrier, NYSERDA will gather in-house information and utilize a third-party technical resource to:</p> <ul style="list-style-type: none"> <li>• Develop informational materials and templates around common measures and results, case studies, and testimonials across sectors to demonstrate potential clean energy opportunities. For example, NYSERDA will develop, market, maintain and update an energy-related, farm management best practice guide.</li> <li>• Provide best practices on scope of work development and review and interpretation of calculations for customers lacking resources knowledgeable on clean energy project development.</li> <li>• Develop tools and resources, for example, preventative and proactive maintenance checklists, for initiating, identifying, and interpreting projects and outcomes.</li> <li>• Explore sector specific needs, including analyzing data for commonalities across projects that could allow for standardization in approaches and measures across space and building characteristics. NYSERDA will leverage existing resources for this data, including FlexTech program data and impact evaluation results.</li> <li>• NYSERDA will share the findings from the aggregated data with the marketplace to spur replication, improve tools, and inspire advancements in technologies. This information could be used to better inform the energy-focused firms on end user commonalities, measure successes, and clean energy areas of opportunities.</li> <li>• NYSERDA will disseminate the best practice materials across multiple platforms, including the NYSERDA website, partner organizations, through trade allies such as sector-based organizations and consortiums, and other NYS entities with similar market participants. Farm management best practice guides will also be specifically delivered to end users.</li> <li>• NYSERDA will also establish peer-to-peer exchanges between and among end-users and consultants to solicit feedback on obstacles and successes as well as identify market needs.</li> </ul>
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<p><b>Key Milestones</b></p>	<p><b><u>Milestone 1 (2017) - complete</u></b></p> <ul style="list-style-type: none"> <li>Identify qualified energy-focused consultants to participate in pilots and serve customers engaging in pilots or cost-shared energy assessments.</li> </ul> <p><b><u>Milestone 2 (2018) - complete</u></b></p> <ul style="list-style-type: none"> <li>Issue solicitation for On Site Energy Manager pilot.</li> </ul> <p><b><u>Milestone 3 (2018) - complete</u></b></p> <ul style="list-style-type: none"> <li>Award funding to initial entities selected under On-Site Energy Manager pilot.</li> </ul> <p><b><u>Milestone 4 (2018) - complete</u></b></p> <ul style="list-style-type: none"> <li>Issue solicitation, New Aggregation Models pilot.</li> </ul> <p><b><u>Milestone 5 (2019) - complete</u></b></p> <ul style="list-style-type: none"> <li>Issue revised open enrollment Agriculture Energy Audit component of FlexTech.</li> </ul> <p><b><u>Milestone 6 (2019) - complete</u></b></p> <ul style="list-style-type: none"> <li>Begin examining the results of pilot(s) to determine if additional rounds of the same pilot are needed in the market or if new pilots are needed. Subsequent milestones will be updated accordingly based on the result of this review.</li> </ul> <p><b><u>Milestone 7 (2020) - complete</u></b></p> <ul style="list-style-type: none"> <li>Issue revised open enrollment FlexTech Program.</li> </ul> <p><b><u>Milestone 8 (2022)</u></b></p> <ul style="list-style-type: none"> <li>Disseminate best practice materials.</li> </ul>
<p><b>Goals Prior to Exit</b></p>	<p>Due to the nature of this work, the lead time associated with customer acquisition and adoption, and end users fundamental need for credible and objective information, NYSERDA envisions continuing to pursue technical services for the duration of the CEF. Priorities and approaches will shift as the various pilots are tested and new market needs are identified. NYSERDA anticipates exiting the activities described in this initiative when:</p> <ul style="list-style-type: none"> <li>Consultants, energy service companies, and other energy-focused firms embrace the piloted business models and incorporate these models as a standard service</li> <li>List of qualified energy-focused firms is used as a reference and resource by the marketplace without NYSERDA assistance.</li> <li>Information provided by NYSERDA on clean energy best practices is incorporated in to other best practice efforts that currently lack this information. For the agriculture sector, this means NY Farm Bureau, Cornell Cooperative Extension and stakeholders trusted by the agriculture community incorporate clean energy best practices in to their activities.</li> </ul>

21.1.5 Relationship to Utility/REV

<p><b>Utility Role/Coordination Points</b></p>	<ul style="list-style-type: none"> <li>NYSERDA has shared information and met with each of the investor owned utilities (IOUs) as well as with the Joint Utilities (JU) to discuss various NYSERDA initiatives. Additional coordination will be undertaken on this specific initiative to provide a clear path for opportunities that are identified to seek out incentive support from IOU energy programs. The best practice guides may provide information on how to access utility programs to support the implementation of energy and process efficiency projects. NYSERDA will maintain current</li> </ul>
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	<p>collaboration with the utilities to ensure the guides provide up-to-date information.</p> <ul style="list-style-type: none"> <li>Starting in 2016, utilities have been removing or decreasing funds to support their own technical services initiatives and instead, directing potential customers to NYSERDA.</li> <li></li> </ul>
<b>Utility Interventions in Target Market</b>	<ul style="list-style-type: none"> <li>While none of the investor owned utilities currently have a dedicated Technical Services initiative, the target market is coincident with stakeholders targeted for utility initiatives. NYSERDA will coordinate with the investor owned utilities on key accounts to optimize the overall impact of both NYSERDA and utility offerings and to avoid confusion and multiple outreach efforts.</li> <li>Utility prescriptive and custom incentive programs currently exist in the market through National Grid, NYSEG, RG&amp;E, Central Hudson, Con Edison, and Orange &amp; Rockland.</li> </ul>

21.1.6 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments		----- Commitments Plan -----					
Budget	Plan Total	Previously Committed	2021	2022	2023	2024	2025
Incentives and Services	78,895,859	26,705,245	31,531,212	6,314,436	5,814,812	5,065,376	3,464,777
Implementation	12,700,583	5,712,197	1,683,908	1,361,667	1,602,849	1,161,586	1,178,376
Research and Technology Studies	1,350,000	50,000	-	260,000	325,000	390,000	325,000
Tools, Training and Replication	4,400,742	1,132,184	526,438	937,544	1,011,128	664,164	129,285
Business Support	-	-	-	-	-	-	-
<b>Total</b>	<b>97,347,184</b>	<b>33,599,626</b>	<b>33,741,558</b>	<b>8,873,647</b>	<b>8,753,789</b>	<b>7,281,127</b>	<b>5,097,438</b>

The budget reflects 8-years of funding (2018-2025) to be committed for multiple rounds of pilots and continuation of FlexTech (which includes Industrial, Agriculture, and Multifamily audits) at reduced funding levels than previously offered in the Resource Acquisition Transition Chapter. It is anticipated that budgets and goals will be revisited annually with re-filings and specifically when pilot results are known.

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B alongside expected acquired benefits. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

21.1.7 Progress and Performance Metrics

The anticipated commitment benefits totals for the initiative with respect to CEF Order target metrics is as follows:

Benefit Commitments

Direct Benefit (2016-2025)	Plan Total
Energy Efficiency MWh Annual	393,034
Energy Efficiency MMBtu Annual	4,034,372
Renewable Energy MWh Annual	1,811
CO2e Emission Reduction (metric tons) Lifetime	7,092,477
Participant Bill Savings Lifetime	1,339,880,746
Leveraged Funds	221,346,227

Indirect Benefit (2016-2030)	Plan Total
Energy Efficiency MWh Annual	205,096
Energy Efficiency MMBtu Annual	1,601,906
Renewable Energy MWh Annual	5,304
CO2e Emission Reduction (metric tons) Lifetime	3,267,055

Benefits summarized in Appendix B represent the plan for acquiring impacts through completed projects or activities.

Benefits listed as direct, are near term benefits directly associated with this initiative’s projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

Benefits listed as indirect represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+ ) of the years noted in the Appendix and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented above and in Appendix B are not discounted, however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

### 21.1.8 Fuel Neutrality

<b>Fuel Neutrality</b>	<p>NYSERDA intends to offer this program in a fuel neutral manner, offering cost-sharing to encourage more efficient use of all fuel types. Based on past program performance, it is anticipated that most savings will be electric in nature, however, all systems regardless of fuel type will need to be included to provide an accurate picture of energy consumption. This will help develop the market at the scale needed to achieve New York State’s clean energy goals.</p> <p>Offering the program on a fuel neutral basis will allow NYSERDA to achieve a ton of carbon savings at a cost of \$233/annual metric ton, compared to a cost of \$387/annual metric ton in an electric only scenario.</p>
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## 21.1.9 Performance Monitoring and Evaluation Plans

<p><b>Performance Monitoring &amp; Evaluation Plan</b></p>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below. Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><u>Test-Measure-Adjust Strategy</u></p> <ul style="list-style-type: none"> <li>• Collect, analyze and report on progress of the initiative by comparing progress against identified goals on a regular basis (i.e., quarterly, bi-annually).</li> <li>• The strategy design will be tested to gauge the target population’s reaction to the strategy. This information will be used to help inform decisions about how to allocate time and resources within the initiative and to confirm market interest and preparedness for full scale implementation.</li> <li>• Insights as to how the initiative can be optimized will be gathered and applied to future initiative design to ensure greatest market impacts within the identified market sectors.</li> <li>• Aggregate and analyze data from NYSERDA-supported projects to verify realized energy savings and persistence of savings.</li> </ul> <p><u>Market Evaluation</u></p> <ul style="list-style-type: none"> <li>• Market evaluation will draw on the logic model and will include baseline measurements of key market indicators. Regular longitudinal measurements (e.g., annual or biennial) will include updates of the baseline metrics as well as additional measurements to assess market change resulting from the initiative.</li> <li>• Key market indicators will include, but not be limited to, the number of qualified and active energy-focused firms; rate at which clean energy technologies are adopted and replicated by participants and non-participants; knowledge of and confidence in the benefits of clean energy approaches and technologies; and impact of any incentive offering changes on measure adoption and participation.</li> <li>• As appropriate, the market evaluation will leverage sector-level market studies as well as publicly and commercially available data to inform the tracking of key market indicators.</li> </ul> <p><u>Impact Evaluation/Field Verification</u></p> <ul style="list-style-type: none"> <li>• An initial impact evaluation is planned for 2020 with an update planned for 2022 and 2025 for the commercial and industrial sectors.</li> <li>• Evaluation M&amp;V will be conducted according to the IPMVP<sup>3</sup> method(s) most appropriate given the measure promoted by this initiative. Data from the impact evaluation can be used to help lend confidence in the market, especially among other end users.</li> <li>• Evaluation M&amp;V of direct savings will focus on areas of greatest impact and will draw upon project-level data collected by the program.</li> <li>• Depending on the extent of replication identified in market evaluation activities, impact evaluation may be conducted on a sample of replication projects to assess outcomes.</li> </ul>
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<sup>3</sup> The International Performance Measurement and Verification Protocol. [www.ipmvp.org](http://www.ipmvp.org).

## 21.2 Market Challenges

### 21.2.1 Theory of Change

Large energy users in New York State are being asked by their investors, customers and employees to take more action to limit their carbon footprint. However, barriers such as low market prices of natural gas, perceived technology risk and policy uncertainty have stifled capital investment in energy efficiency projects. The Market Challenges initiative seeks to fund pilot projects that achieve one of two criteria: provide a streamlined and cost-effective manner for large energy users to reduce greenhouse gas emissions; or address a difficult-to-decarbonize energy use through a project that has the potential for replicability and scale.

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>Resource constraints of the customer:</b> Large energy users have both internal competition for capital and constraints on staff time, which can lead to ad-hoc energy decision-making rather than conscious long-term planning. By allowing large energy users to propose carbon reduction goals and funding requests, NYSERDA will ease resource constraints. Interim payments will reduce the cost of capital for selected participants by buying down a portion of a project or program’s cost at the outset rather than at the post-implementation stage. This frees participants of the need to raise outside capital to fund projects/programs or allows them to allocate available capital to other internal priorities.</li> <li>• <b>Limited ability to implement bundled energy solutions:</b> Currently, large energy users must participate in multiple NYSERDA programs to pursue funding for energy efficiency and renewable energy projects. By creating one channel for participation NYSERDA will minimize administrative burdens on large energy users and facilitate the bundling of clean energy projects.</li> <li>• <b>Limited examples of deep energy retrofits for large energy users:</b> Currently, there are limited examples of big, tall buildings in climates similar to New York that have conducted retrofits that deliver significant carbon reduction. By partnering with real estate owners and helping to buy down the risk of low carbon retrofits, NYSERDA will accelerate private sector investment in low carbon retrofits and build market confidence in their value proposition.</li> <li>• <b>Uncertainty of project benefits:</b> Many large energy users do not conduct independent measurement &amp; verification of clean energy projects, and therefore are not confident in the energy savings and financial benefits. In addition, there is a significant disconnect between pitched ROIs for clean energy solutions and what customers believe. The lack of data to support clean energy project benefits can be an impediment to pursuing future clean energy projects. By providing independent, verified performance data to customers, this strategy will seek to improve confidence in clean energy solution benefits.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If large energy users in the commercial, industrial and multifamily sectors establish carbon reduction goals and are provided with dedicated funding to use over a three-year span, then these customers will implement more clean energy projects.</li> </ul>



	<ul style="list-style-type: none"> <li>• If these energy users are given the flexibility to use their dedicated funds to pursue clean energy projects that meet their specific needs, then carbon reduction goals set by participants will be achieved.</li> <li>• If NYSERDA partners with real estate portfolio owners of large energy users in the commercial, industrial and multifamily sectors, and buys down the risk of an initial cohort of low carbon retrofits, these portfolio owners will replicate successful approaches throughout their portfolio of buildings in NYS.</li> <li>• If independent project measurement &amp; verification is required of participants and provided by NYSERDA, participants will have improved confidence in the benefits associated with clean energy projects.</li> <li>• If NYSERDA builds a cohort of portfolio owners committed to achieving carbon neutral buildings and publishes data on retrofit needs, OEMs will invest in innovation and product development to address market gaps.</li> </ul>
<p><b>Activities</b></p>	<p><b><u>C&amp;I Carbon Challenge</u></b></p> <p><b>1. Develop Competitive Solicitation</b></p> <ul style="list-style-type: none"> <li>• Issue a series of competitive request for proposals to solicit large C&amp;I customers that are willing to establish carbon reduction goals for a three-year period. Successful proposals must provide carbon reductions and private investment levels that meet or exceed what CEF programs would achieve.</li> <li>• Hold a webinar to explain the goals and structure of the C&amp;I Carbon Challenge and have a question and answer session with potential participants.</li> </ul> <p><b>2. Select Proposals to Fund</b></p> <ul style="list-style-type: none"> <li>• Evaluate proposals based on criteria including but not limited to: <ul style="list-style-type: none"> <li>○ Proposed carbon reduction goal requested amount of funding, and cost effectiveness of the proposed \$/ton achievement.</li> <li>○ Leveraged funds.</li> <li>○ Additional impact associated with the CEF investment.</li> <li>○ Assessment of the proposed clean energy action plan and the proposer’s ability to achieve the stated carbon reduction goal.</li> <li>○ Executive commitment and staff resources.</li> <li>○ Previous clean energy project performance.</li> <li>○ Commitment to a robust M&amp;V plan, completed with third-party assistance provided by NYSERDA, to assess clean energy project impact and ROI</li> <li>○ Ability to address energy resource load constraints</li> </ul> </li> <li>• Select at least 3 proposals to receive financial support of up to \$5 million each to fund implementation.</li> </ul> <p><b>3. Implementation</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will work closely with selected proposers to help with implementation and track progress to ensure that milestones and deliverables are met. NYSERDA will also provide third party M&amp;V contractors to measure the impact of implemented projects. A portion of each funding award will be held until M&amp;V is complete and paid based on performance.</li> </ul> <p><b>4. Assessment</b></p>

	<ul style="list-style-type: none"> <li>• During and after implementation, NYSERDA will assess outcomes and determine how learnings could be applied to utility and/or other NYSERDA offerings.</li> </ul> <p><b><u>Empire Building Challenge</u></b></p> <ol style="list-style-type: none"> <li><b>1. Conduct global scan.</b> Conduct a global scan to identify and catalog low carbon technologies that can support low carbon retrofits for big, tall buildings</li> <li><b>2. Convene real estate portfolio owners</b> to develop a shared definition of “carbon neutral” for big, tall buildings</li> <li><b>3. Compile and publish market data</b> that provides OEMs better visibility on the needs and market potential for low carbon solutions for big, tall buildings</li> <li><b>4. Develop a pool of real estate portfolio owners partnering with NYSERDA</b> towards the goal of achieving carbon neutral buildings</li> <li><b>5. Develop Competitive Solicitation</b> <ul style="list-style-type: none"> <li>• Issue two rounds of competitive requests for proposals to solicit owners of big, tall buildings who have committed one or more of their buildings to a carbon neutral goal to submit low carbon retrofit proposals.</li> </ul> </li> <li><b>6. Select proposals to fund</b> <ul style="list-style-type: none"> <li>• Evaluate proposals based on criteria including but not limited to: <ul style="list-style-type: none"> <li>• Potential for replicability</li> <li>• Proposed carbon reduction goal, requested amount of funding, and cost effectiveness of the proposed project</li> <li>• Leveraged funds</li> <li>• Executive commitment and staff resources</li> <li>• Team and project partners responsible for project development and implementation</li> </ul> </li> <li>• Select at least 3 proposals to receive financial support of up to \$5 million each to fund implementation.</li> </ul> </li> <li><b>7. Implementation</b> <ul style="list-style-type: none"> <li>• NYSERDA will work closely with selected proposers to help with implementation and track progress to ensure that milestones and deliverables are met. NYSERDA will also provide third party M&amp;V contractors to measure the impact of implemented projects.</li> </ul> </li> <li><b>8. Assessment</b> <ul style="list-style-type: none"> <li>• During and after implementation, NYSERDA will assess outcomes and determine how learnings could be applied to utility and NYSERDA offerings.</li> </ul> </li> </ol>
<p><b>Key Milestones</b></p>	<p><b>C&amp;I Carbon Challenge</b></p> <p><u>Milestone 1 (2020)</u> - Complete</p> <ul style="list-style-type: none"> <li>• Issue awards following release of competitive solicitation.</li> </ul> <p><u>Milestone 2 (2021)</u></p> <ul style="list-style-type: none"> <li>• Issue awards following release of competitive solicitation.</li> </ul> <p><b>Empire Building Challenge</b></p> <p><u>Milestone 1 –2020</u></p> <ul style="list-style-type: none"> <li>• Announce the participating real estate owners and their public commitments from round 1 of solicitation.</li> </ul>

	<p><u>Milestone 2 –2020 - Complete</u></p> <ul style="list-style-type: none"> <li>• Publish preliminary results from global scan of low carbon technologies and publish market data that provides OEMs and other solution providers better visibility into NY retrofit market needs and opportunities.</li> </ul> <p><u>Milestone 3 – 2021</u></p> <ul style="list-style-type: none"> <li>• Issue awards following release of round 1 of the solicitation.</li> </ul> <p><u>Milestone 4 –2021</u></p> <ul style="list-style-type: none"> <li>• Announce the partnering of real estate owners and their public commitments from round 2 of solicitation.</li> </ul> <p><u>Milestone 5 –2022</u></p> <ul style="list-style-type: none"> <li>• Issue awards following release of round 2 of the solicitation.</li> </ul>
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21.2.2 Target Market Characterization

<b>Target Market Segment(s)</b>	<ul style="list-style-type: none"> <li>• The target market is end-users with high levels of energy consumption in the commercial, industrial and multifamily sectors.</li> <li>• Large building and facility owners, managers, and operators</li> <li>• Energy-focused firms such as consultants, energy service companies, developers, vendors, and financiers</li> <li>• Original equipment manufacturers of low carbon technologies</li> </ul>
<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• The C&amp;I Carbon Challenge was informed by and is consistent with the CEAC’s Voluntary Investment and Other Market Development Working Group’s Voluntary Investment Proposal Parameters Report,<sup>4</sup> which included discussion of voluntary investment programs.</li> <li>• Working group members that contributed to the findings in the report include TRC, the NY investor-owned utilities, Multiple Intervenors, SolarCity, Citizens for Local Power, Independent Power Producers of New York, New York Power Authority, NextEra, New York City Energy Efficiency Corporation, New York Battery &amp; Energy Storage Technology Consortium, and Alliance for Clean Energy New York.</li> <li>• In addition to the official working group, NYSERDA also interviewed large C&amp;I customers to gather feedback on design parameters for the C&amp;I Carbon Challenge.</li> <li>• NYSERDA will also leverage its ongoing work in developing strategic relationships with our Channel Partners to promote market awareness of and interest in the C&amp;I Carbon challenge, including, but not limited to, the Business Council.</li> <li>• The Empire Building Challenge initiative was informed by direct engagement with the Real Estate Board of New York (REBNY) and many</li> </ul>

<sup>4</sup> Voluntary Investment Proposal Parameters Report. December 21, 2016. Matter 16-01010 – In the Matter of the CEAC’s Voluntary Investment & Other Market Development Working Group.

	REBNY members; as well as conversations with leading mechanical, electrical, and plumbing (MEP) engineering firms as well as original equipment manufacturers (OEM) of low carbon solutions.
<b>Relationship to Utility Programs and REV Initiatives</b>	This initiative will contribute to the achievement of New York State’s Climate Leadership and Community Protection Act goals by supporting efforts of large energy users to reduce their carbon footprint as well as by funding replicable and scalable approaches to retrofitting big, tall buildings to low carbon levels of performance. NYSERDA will coordinate with the Joint Utilities on potential projects to both share insights as well as optimize incentive allocations for heat pump and custom energy efficiency projects. Utilities have established relationships with large energy customers who are candidates for this initiative. NYSERDA will pro-actively seek opportunities to work closely with utility partners to collaborate on building support for the program, maximize information exchange, and increase the financial scale of this initiative. In its REV Track One Order, the PSC directed the utilities to implement self- direct programs for large energy users by January 1, 2017. After implementation of the initial self-direct programs, some utilities have elected to terminate the program due to lack of customer interest.

21.2.3 Fuel Neutrality

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>NYSERDA intends to offer this strategy in a fuel neutral manner. Offering the strategy on a fuel neutral basis will allow NYSERDA to achieve an annual ton of carbon savings at a cost of \$231, compared to a cost of \$464 in an electric-only scenario.</li> </ul>
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21.2.4 Performance Monitoring and Evaluation Plans

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p>Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <ul style="list-style-type: none"> <li>Continually assess the volume of market response to solicitations and ability of proposals to meet CEF return on investment benchmarks.</li> <li>Determine potential programmatic and/or communications strategy changes necessary for success based on the aforementioned</li> </ul>
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	<p>assessment and feedback from market stakeholders.</p> <ul style="list-style-type: none"> <li>• NYSERDA project managers will have monthly meetings with participants and 3rd party M&amp;V consultants to continually monitor savings performance</li> <li>• Work to improve communication around analysis processes for future solicitations based on current program performance to ensure that proposal metrics more closely align with realized savings.</li> </ul> <p><b><u>Market Challenges M&amp;V Strategy</u></b></p> <ul style="list-style-type: none"> <li>• M&amp;V plans will be developed for each of the selected participants based on the specifics of the implemented projects. M&amp;V work will be funded out of the Implementation Support budget included in this plan.</li> </ul> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"> <li>• Specific technologies/solutions funded through this initiative will not be identified until proposals are received through various solicitations. Focusing on the selected proposals, NYSERDA will gather and document relevant baseline indicator values from known values such as internal, public, and commercially available data.</li> <li>• Historical tracing methods may be used to assess broad outcomes and indicators as listed under the Output and Outcomes table after a critical mass of program-initiated activity has been completed. These methods will measure and substantiate the initiative’s role in areas such as replication of clean energy projects within the portfolios of real estate owners, increased confidence in benefits of clean energy projects, and increase in investments in innovation and product development by OEMs to address barriers specific to this sector.</li> </ul> <p><b><u>Impact Evaluation/Field Verification</u></b></p> <ul style="list-style-type: none"> <li>• Impact evaluation activity is planned to include desk reviews of all M&amp;V plans and analyses developed through the initiative. This review will assess the methodologies used and any variances in savings calculations. A program-level savings adjustment factor may be applied if appropriate.</li> </ul>
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21.2.5 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments		----- Commitments Plan -----						
Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
Incentives and Services	96,224,753	18,257,937	-	17,500,000	29,749,753	20,000,000	10,717,063	-
Implementation	6,747,897	485,894	462,896	1,769,062	1,869,062	1,243,568	917,415	-
Research and Technology Studies	-	-	-	-	-	-	-	-
Tools, Training and Replication	2,250,000	-	224,007	680,000	1,100,000	245,993	-	-
Business Support	-	-	-	-	-	-	-	-
<b>Total</b>	<b>105,222,650</b>	<b>18,743,831</b>	<b>686,903</b>	<b>19,949,062</b>	<b>32,718,815</b>	<b>21,489,561</b>	<b>11,634,478</b>	<b>-</b>

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B alongside expected acquired benefits. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

### 21.2.6 Progress and Performance Metrics

The anticipated commitment benefits totals for the initiative with respect to CEF Order target metrics is as follows:

#### Benefit Commitments

<b>Direct Benefit (2016-2025)</b>	<b>Plan Total</b>
Energy Efficiency MWh Annual	240,332
Energy Efficiency MMBtu Annual	3,294,693
Renewable Energy MWh Annual	7,766
CO2e Emission Reduction (metric tons) Lifetime	4,877,138
Participant Bill Savings Lifetime	840,534,386
Leveraged Funds	314,607,891

<b>Indirect Benefit (2016-2030)</b>	<b>Plan Total</b>
Energy Efficiency MWh Annual	236,342
Energy Efficiency MMBtu Annual	446,400
Renewable Energy MWh Annual	-
CO2e Emission Reduction (metric tons) Lifetime	3,580,247

Benefits summarized in Appendix B represent the plan for acquiring impacts through completed projects or activities.

Benefits listed as direct, are near term benefits directly associated with this initiative's projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

Benefits listed as indirect represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+ ) of the years noted in the Appendix and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented above and in Appendix B are not discounted, however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

NYSERDA has established a few key 'Goals Prior to Exit' for this program, which reflect the necessary progress expected before NYSERDA exits investment in this area of the market. These goals include:

- The termination of Empire Building Challenge will be based upon a significant increase in the prevalence of low carbon retrofits for big, tall buildings and a reduction in the return on investment uncertainty. NYSERDA will survey the market periodically to measure progress in these areas.
- Original Equipment Manufacturers' and solution providers' investments in business development, product development and innovation have alleviated the retrofit pain points identified by owners of big, tall buildings.

## 21.3 Clean Energy Siting & Soft Cost Reduction

### 21.3.1 Overview

<b>Present Situation</b>	<ul style="list-style-type: none"><li>• On August 1, 2016, the Public Service Commission issued an order adopting a Clean Energy Standard (CES), which mandates that clean energy sources generate 50% of New York’s electricity by 2030. In July of 2019, Governor Andrew Cuomo signed the Climate Leadership and Community Protection Act (CLCPA), which increases the 50% renewable CES goal to 70% by 2030 and converts that goal into a mandate.</li><li>• Meeting the 70% goal will require accelerated market growth in numerous sectors, including clean energy generation, energy efficiency, and energy storage, as well as acceleration of the large-scale renewable siting process. Accordingly, in April of 2020, New York State enacted the Accelerated Renewable Energy Growth and Community Benefit Act (the Act), the goal of which is to help foster and encourage expedient siting and development of community and environmentally compatible renewable energy facilities in furtherance of the CLCPA.</li><li>• The Act includes a direction that NYSERDA develop and implement the Clean Energy Resources Development and Incentives Program (the “Build-Ready program”), through which NYSERDA will identify suitable sites and then develop renewable energy projects for eventual competitive auction to private developers, while also implementing new initiatives to foster and encourage local understanding about the importance of renewable energy and the value that it can bring to local communities, and including environmental justice as a major consideration in taking these actions.</li><li>• Increasing the financial attractiveness of clean energy projects can drive significant growth in these markets. As capital costs continue to decline for many clean energy technologies, a key area to drive greater cost efficiencies is reducing non-equipment costs. These costs are referred to as soft costs or balance-of-system (BOS) costs. Current clean energy soft cost barriers include inefficient and inconsistent local regulations, one-time costs (e.g. land siting and interconnection and environmental studies), and ongoing costs (e.g. customer acquisition and management). A prime example of the growing impact of non-equipment costs is solar development. Soft costs are becoming a larger fraction of the total cost of solar systems and now make up more than half the total cost of residential and commercial systems.<sup>5</sup></li><li>• NY-Sun, in addition to providing financial incentives to reduce the capital costs of investment in solar electric equipment, has led several initiatives to reduce soft costs, including the PV Trainers Network (PVTN). The PVTN was launched in 2014 primarily as a training and workforce development program, but has evolved to provide educational materials and remote technical assistance, helping to address non-financial barriers. NYSERDA’s Clean Energy Communities program has also provided some technical assistance via the PVTN, but this assistance focused narrowly on implementing solarize campaigns and adopting the unified solar permit.</li><li>• As of June 2020, there were more than 13,000 MW of Large Scale Renewables (LSR) in either the New York Independent System Operator (NYISO) Interconnection Queue or in the Article 10 process. These projects represent</li></ul>
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<sup>5</sup> Gallagher, Ben. “U.S. Solar PV Price Brief H1 2016: System Pricing, Breakdowns and Forecasts.” *Green Tech Media Research*. June 2016.



	<p>approximately 45% of the needed incremental generation to achieve the Clean Energy Standard goal. While NYSERDA has engaged in some targeted soft cost reduction activities related to LSR, the significant increase in LSR necessary to achieve the Clean Energy Standard goals will require a focused effort to reduce all system cost components.</p> <ul style="list-style-type: none"> <li>• NYSERDA announced an energy storage target of 1,500 MW by 2025 and a 3,000 MW statewide goal by 2030.</li> <li>• Despite considerable progress through existing soft cost reduction efforts, barriers to clean energy deployment remain. Many local governments are encountering large-scale clean energy development for the first time, and are not equipped to efficiently and appropriately manage it. Many local governments struggle with issues such as payment-in-lieu-of-tax (PILOT) agreements, environmental impact studies and zoning.<sup>6</sup> Additionally, new clean energy models and regulatory paradigms, such as the Value of Distributed Energy Resources (VDER), can create additional questions and uncertainty that local governments need to understand and navigate.</li> <li>• Reducing soft costs associated with local governments, as well as other soft costs such as customer acquisition costs or community acceptance issues, will make clean energy deployment faster, easier and more affordable, contributing to the goal of creating self-sustaining markets.</li> </ul>
<p><b>Intervention Strategy</b></p>	<p>Addressing soft cost barriers is critical to reducing the overall price of clean energy, maintaining market growth, and meeting the State’s ambitious clean energy deployment goals. NYSERDA will launch a Clean Energy Siting &amp; Soft Cost Reduction initiative to coordinate a portfolio of activities that aggressively target the most urgent soft cost barriers to clean energy market growth. The Clean Energy Siting &amp; Soft Cost Reduction initiative will coordinate soft cost reduction activities through a framework that will improve collaboration and communication among stakeholders, and will systematically address market barriers inhibiting greater clean energy adoption in NYS. This framework will:</p> <ul style="list-style-type: none"> <li>• Synchronize and lead projects across NYSERDA and other state agencies, integrating and coordinating expertise and resources to best advance the State's clean energy goals.</li> <li>• Create a central forum for representatives from industry, authorities having jurisdiction (AHJs),<sup>7</sup> and utility companies to address soft cost barriers and collaboratively identify solutions.</li> <li>• Research and develop soft cost solutions to support the many stakeholders involved in clean energy deployment.</li> <li>• Provide comprehensive direct technical assistance for AHJ officials across New York State in a demand-driven fashion, based on requests from AHJ officials and jurisdictions facing significant clean energy development challenges.</li> <li>• Provide financial assistance to encourage soft cost solution innovation, and recognize communities that have taken steps to significantly reduce soft costs.<sup>8</sup></li> </ul> <p>Initial projects for the Clean Energy Siting &amp; Soft Cost Reduction initiative will focus on distributed solar and LSR projects, followed by battery energy storage.</p>

<sup>6</sup> U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. “Soft Costs.” Accessed at <https://energy.gov/eere/sunshot/soft-costs>.

<sup>7</sup> AHJs are defined as local and state entities and officials that have a decision-making role in clean energy project development.

<sup>8</sup> NYSERDA will coordinate internally as appropriate with programs such as Clean Energy Communities to ensure activities are complimentary and not duplicative.

	<p>NYSERDA will utilize the Clean Energy Siting &amp; Soft Cost Reduction framework to pursue soft cost reduction strategies for other clean energy technologies (e.g. combined heat and power), leveraging tools and related engagements with communities and AHJs.<sup>9</sup></p>
<b>Goals</b>	<ul style="list-style-type: none"> <li>• Optimize the project permitting, interconnection and approval process within each clean energy technology project development cycle related to solar, wind, and battery energy storage.</li> <li>• Increase the number of clean energy projects successfully completing the project permitting, interconnection and approval process.</li> <li>• Contribute to reducing distributed solar soft costs in New York State 20% on average in each category by 2020 (relative to a 2016 baseline study<sup>10</sup>).</li> </ul>
<b>State Energy Plan/Clean Energy Standard Link</b>	<ul style="list-style-type: none"> <li>• The Clean Energy Siting &amp; Soft Cost Reduction initiative will play a critical role in achieving the 2015 State Energy Plan (SEP) and Clean Energy Standard by reducing the cost of clean energy deployment. The initiative will expand clean energy in the state’s electricity mix by reducing the cost of deployment and increasing the percentage of projects in the interconnection queue that are completed.</li> <li>• The initiative will also contribute to the SEP’s economic development goals by creating and retaining jobs in New York, lowering energy costs, reducing greenhouse gases, and lessening the need for new fossil fuel power plants. The SEP notes, “To accelerate market transformation, REV initiatives will focus on identifying, mitigating, and removing common market barriers to clean energy deployment.” The Clean Energy Siting &amp; Soft Cost Reduction initiative is designed to fulfill that specific purpose.</li> </ul>

21.3.2 Target Market Characterization

<b>Target Market Segment(s)</b>	<p>The Clean Energy Siting &amp; Soft Cost Reduction initiative targets clean energy technologies at the residential, commercial and utility scale, including the <u>Community Distributed Generation</u> market.</p>
<b>Market Participants</b>	<p>Market participants include:</p> <ul style="list-style-type: none"> <li>• NYS AHJs (e.g. mayors, sustainability officers, code officials, fire officials, planning and zoning board members, inspectors and other municipal officials)</li> <li>• NYS agencies</li> <li>• NYS utilities and the New York Independent System Operator</li> <li>• Clean energy companies, developers and trade associations</li> <li>• National labs / U.S. Department of Energy (DOE)</li> <li>• Universities</li> <li>• Non-profit organizations (e.g. environmental, economic development)</li> <li>• Schools, fire districts and other public organizations</li> <li>• Tribes</li> </ul>
<b>Market Readiness</b>	<ul style="list-style-type: none"> <li>• New York State recently enacted several policies to drive growth in clean energy electricity generation. These polices are attracting national and international attention, making New York an attractive market for clean energy development.</li> <li>• Developers and community members have identified clean energy project siting, permitting, interconnection and community acceptance as significant</li> </ul>

<sup>9</sup> It is envisioned that this Investment Plan will be amended in the future as additional soft cost reduction opportunities utilizing this framework are identified for other clean energy technologies.

<sup>10</sup> Manson, Cynthia. “Solar Balance-Of-System Costs Baseline Cost Study.” Prepared for NYSERDA by Industrial Economics, Incorporated (IEc). May 2017.

	<p>contributors to project cost and the risk of project failure. To effectively capitalize on the convergence of a favorable policy environment and declining hardware costs, New York must reduce soft cost barriers inhibiting clean energy development. Soft cost reductions are necessary to drive clean energy development to the scale needed to meet the State’s clean energy goals.</p> <ul style="list-style-type: none"> <li>• Because of the numerous market actors and varied requirements and regulations across the State, NYSERDA is well positioned to help drive economies of scale and standardize the clean energy development process across multiple jurisdictions and stakeholders, including AHJs, solar developers, state agencies, universities and utility companies.</li> <li>• The solar market provides an example of the need to reduce soft cost barriers. In the United States, solar energy established itself for the first time in 2016 as the largest source of newly installed electrical capacity.<sup>11</sup> U.S. developers added 14.6 GW of new solar capacity, nearly doubling the amount added to the grid in 2015.<sup>12</sup> Despite significant solar capacity growth nationally and in New York, the state’s solar market continues to face soft cost barriers that hinder greater growth and are becoming increasingly important to address. While NY-Sun has developed several initiatives to support New York’s solar market, significantly reducing soft costs will require a new platform to lead stakeholder collaboration, develop soft cost solutions, and deliver technical assistance across a broader suite of technologies and project sizes.</li> </ul>
<b>Customer Value</b>	<p>The Clean Energy Siting &amp; Soft Cost Reduction initiative will support the continued growth of New York’s clean energy industry, making the state’s energy system more efficient and resilient, achieving ratepayer savings, increasing consumer choice and protecting the environment. The Clean Energy Siting &amp; Soft Cost Reduction initiative specifically will provide customer value in the following ways:</p> <ul style="list-style-type: none"> <li>• Customers who purchase or lease clean energy systems will benefit from soft cost reductions through lower system prices. Customers will also realize savings on their monthly utility bills.</li> <li>• As soft costs fall, clean energy generation will become more competitive with conventional energy sources, which will attract investment in clean energy development, spurring continued industry and job growth in New York.</li> <li>• A combination of tools, resources, education and technical assistance will provide a strong foundation for AHJs to independently manage future clean energy development in their communities.</li> <li>• Increasing clean energy generation reduces harmful air pollution and greenhouse gasses.</li> <li>• Engaging communities in the development process can increase satisfaction with hosting utility-scale wind, solar, and battery energy storage projects, which will increase acceptance of LSR and clean energy development, and improve perceptions across the state.</li> </ul>

21.3.3 Stakeholder/Market Engagement

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>• NYSERDA staff communicates regularly with clean energy project developers and AHJs on requests for information and technical assistance, as well as assistance with delayed projects. These interactions revealed a significant need</li> </ul>
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<sup>11</sup> Solar Energy Industries Association. “U.S. Solar Market Grows 95% in 2016, Smashes Records.” Feb. 14, 2017. Accessed <http://www.seia.org/news/us-solar-market-grows-95-2016-smashes-records>.

<sup>12</sup> Ibid.

	<p>among local governments for greater knowledge and technical capacity on clean energy development issues. For example, AHJs communicated their desire to develop distributed solar energy projects but lacked the necessary expertise and experience on issues such as solar permitting, planning, zoning and property taxes. This initiative was designed to meet these needs in communities across the state.</p> <ul style="list-style-type: none"> <li>• AHJs communicated an asymmetry of information between developers and communities regarding the planning, zoning, taxation, health and environmental impacts of LSR project development. Local officials and community leaders with a decision-making role in planning and zoning frequently lack the resources to assess the costs and benefits of LSR development, and have voiced a desire for an excess of conservatism in working with project developers. This approach commonly leads to project delays, the erosion of public support and project failure.</li> <li>• Future Engagement: <ul style="list-style-type: none"> <li>○ NYSERDA will periodically query market stakeholders to assess program effectiveness, identify new program opportunities, and refine program strategies.</li> <li>○ NYSERDA will organize in-person workshops and online webinars to announce new market solution products, and to share the results of research, pilot projects and case studies.</li> <li>○ NYSERDA will share the findings and experience of the Clean Energy Siting &amp; Soft Cost Reduction initiative to inform soft cost reduction initiatives and interventions in other market segments.</li> </ul> </li> </ul>
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21.3.4 Theory of Change

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>AHJs lack resources to manage clean energy development.</b> They often lack staff capacity and technical knowledge, inhibiting their efforts to efficiently and appropriately manage clean energy development. Providing information, resources and technical assistance will help AHJs incorporate new clean energy technologies into local protocols (e.g. planning, zoning, land use, permitting, inspection and access).</li> <li>• <b>Local concerns about clean energy development impede deployment.</b> While some communities embrace clean energy development, some local governments and residents express concern about the pace and extent of it. Concerns stem in part from a lack of objective information about the impacts of clean energy development and ways to mitigate those impacts.</li> <li>• <b>Soft costs among clean energy developers and other stakeholders remain high.</b> These include one-time costs such as land siting, interconnection engineering and associated processes, and environmental studies, as well as ongoing costs such as customer acquisition and management, operation and maintenance, decommissioning, financing, supply chain costs, installation labor, profit and transaction costs. Identifying solutions to reduce these soft costs will make clean energy projects more affordable and attainable.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If NYSERDA conducts outreach and provides education for AHJ officials, then their capacity to efficiently manage clean energy development will improve.</li> <li>• If NYSERDA provides direct, one-on-one technical assistance to AHJs, then local regulations will become more conducive to clean energy development.</li> <li>• If NYSERDA provides one-on-one technical assistance to AHJs, then permitting and approval times will decrease, and project approval rates will increase.</li> <li>• If NYSERDA provides technical analysis and support related to the NYISO interconnection queue, it will increase the likelihood that the NYISO will meet its</li> </ul>

	<p>goal of completing a class year<sup>13</sup> interconnection study process and commence a new class year process every year.</p> <ul style="list-style-type: none"> <li>• If NYSERDA makes available funding opportunities that recognize AHJ efforts to reduce clean energy soft costs, then AHJs will be incentivized to take further steps to reduce these soft costs.</li> <li>• If NYSERDA provides funding for soft cost research and special projects, then award recipients will identify innovative soft cost reduction opportunities and strategies.</li> <li>• If NYSERDA provides consultant support for the initial launch of the Build Ready effort, the program is more likely to successfully develop projects that serve as examples to the private sector, while solidifying NYSERDA’s role of fostering and encouraging local understanding about the importance of renewable energy and the value that it can bring to local communities.</li> </ul>
<b>Activities</b>	<p><b>Create and refine soft cost solutions</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will create and refine soft cost solutions, including manuals, factsheets, case studies and technical reports that provide information on best practices to overcome soft cost barriers. Products may address soft costs of a single clean energy technology or may cover multiple clean energy technologies that experience a common soft cost barrier.</li> <li>• Specific products may include informational resources on Article 10, guidance on setbacks for wind and solar, studies on property value impacts of wind, solar and battery energy storage, studies on property value impacts of wind and solar development and battery energy storage,, and financial guidance tools for communities.</li> <li>• NYSERDA will also conduct technical assessments and outreach around interconnection inefficiencies for LSR projects to reduce interconnection costs and timelines. Analysis of the LSR interconnection process from the perspective of the NYISO, the Transmission Owner and the project developer will be evaluated to identify areas for improvement from a technical and policy standpoint. The results of the analysis will be presented and discussed through NYISO committees.</li> <li>• NYSERDA will also seek technical consultant support to help guide resource development and other activities, including preparing for the initial launch of the Build Ready initiative, reviewing and providing input on model laws and guidance documents, and other technical support as necessary to ensure successful implementation of soft cost solutions.</li> </ul> <p><b>Develop a comprehensive outreach and education campaign for AHJ officials across New York State.</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will conduct an outreach and education campaign. The campaign will utilize online resources, webinars, workshops, and events to disseminate soft cost solutions and products. It will leverage NYSERDA’s network of existing AHJ contacts as well as membership organizations (e.g., the New York Association of Towns and the New York Conference of Mayors). The campaign will draw upon the statewide outreach and education efforts of NYSERDA’s Clean Energy Communities program.</li> <li>• Workshops will occur at the county level to maximize efficiency, expand access and facilitate collaboration among AHJs. The outreach and education campaign will serve to disseminate soft cost solutions and raise awareness of the availability of technical assistance.</li> <li>• As part of this campaign, NYSERDA will convene and facilitate regional meetings for community stakeholders in probable LSR areas to advance objective</li> </ul>

<sup>13</sup> NYISO class year studies evaluate the cumulative impact of a group of projects that have completed similar milestones.

information on the costs and benefits of LSR development, encourage proactive planning and zoning for clean energy, expand relationships with community or regional leaders to better facilitate information-sharing, and increase awareness of the challenges and successes of LSR development in specific regions of New York State.

**Provide targeted, one-on-one technical assistance**

- NYSERDA will provide technical assistance to local governments on clean energy development issues. NYSERDA will train all technical assistance providers and review all materials to ensure consistent content and services leveraging a pool of contractors who can provide on-the-ground assistance. NYSERDA will also solicit feedback from AHJ officials to ensure providers are meeting their needs.
- Technical assistance offerings will include remote and in-person troubleshooting and consultations, including assisting AHJ officials with implementing soft cost solutions. Efforts will include describing the fundamentals of the project development process, interpreting manuals, factsheets and technical reports, and making connections to other communities with existing LSR projects. NYSERDA will prepare community-specific materials relevant to LSR development for use during one-on-one technical assistance sessions.
- NYSERDA will provide assistance to communities considering property tax agreements to facilitate a smooth process with increased satisfaction from both communities and developers. This effort will involve connecting communities that have successfully negotiated tax agreements with communities beginning the process, so they may share experiences and resources. NYSERDA will also offer training to Industrial Development Agencies (IDA) across New York State to educate them on LSR project economics.

**Funding Opportunities**

- NYSERDA will coordinate with the Clean Energy Communities (CEC) program to recognize communities that actively reduce clean energy soft costs. As background, the CEC program sets out 10 high-impact actions for AHJs to complete. The CEC program has a dozen coordinators across the state to help AHJs complete the high-impact actions. However, some coordinators lack the necessary technical expertise to properly advise AHJs on the high-impact actions.<sup>14</sup>
- To supplement the CEC program for clean energy technologies, NYSERDA will issue a competitive solicitation to offer grants to communities that reduce clean energy technology soft costs (regarding permitting, zoning, planning, taxation, etc.). Grant funding will support additional specified actions to further reduce soft costs, such as comprehensive plans that incorporate clean energy development. NYSERDA will highlight successful AHJs in media outlets and through partner organizations. This recognition will help spur AHJs to improve their capabilities to independently and efficiently manage clean energy development.
- NYSERDA will also issue a competitive solicitation for Soft Cost Innovation, which will support innovative practices that significantly reduce soft costs and accelerate clean energy adoption. Proposals may include market research, product development, software implementation or demonstration projects.<sup>15</sup> Proposal selection criteria will include project size, cost-effectiveness, replicability and the

<sup>14</sup> The CEC program does not specifically address soft costs, nor does it address the needs of the commercial or utility-scale clean energy markets. AHJs currently have the greatest needs for technical assistance in these market segments because of the introduction of community solar and large-scale renewable projects.

<sup>15</sup> Examples of possible proposals could include a developer survey regarding installation practices, a GIS tool to assist AHJ siting, utility interconnection software, or photo-sharing practices for local inspectors.

	<p>incorporation of efficiency measures, as well as portfolio-level considerations such as geographic balance, diversity of approaches and the overall number of distinct awardees.</p> <p><b>Establish a Soft Cost Working Group</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will convene and lead a soft cost working group to facilitate communication and collaboration on soft costs among market stakeholders. The working group will advise on efforts to develop and deploy soft cost solutions, tools and resources.<sup>16</sup> It will research and provide recommendations on specific soft cost barriers, working in collaboration with NYSERDA contractors to develop solutions. The soft cost working group will make its products publicly available to encourage adoption by relevant market stakeholders.</li> <li>• Working group membership will be open to all interested parties and could include AHJs, state agencies, clean energy developers, utility companies, universities, national laboratories, trade associations, non-governmental organizations and consumer advocates, and others. NYSERDA staff will participate in other state-level energy working groups to coordinate efforts.</li> <li>• The working group will initially focus on distributed solar barriers. NYSERDA will leverage this experience and related findings to address soft cost issues for other distributed energy resources, inviting stakeholders from other clean energy technologies when appropriate.</li> </ul>
<b>Key Milestones</b>	<p><b><u>Milestone 1 (2018) - Complete</u></b></p> <ul style="list-style-type: none"> <li>• Establish a soft cost working group.</li> </ul> <p><b><u>Milestone 2 (2018) - Complete</u></b></p> <ul style="list-style-type: none"> <li>• Issue a solicitation to select a pool of contractors and organizations to develop, disseminate, and implement soft cost solutions.</li> </ul> <p><b><u>Milestone 3 (2018) - Complete</u></b></p> <ul style="list-style-type: none"> <li>• Contract with a pool of contractors and organizations.</li> </ul> <p><b><u>Milestone 4 (2018) - Complete</u></b></p> <ul style="list-style-type: none"> <li>• Launch a statewide outreach and education campaign to publicize soft cost solutions and technical assistance services, including convening regional meetings for LSR stakeholders.</li> </ul> <p><b><u>Milestone 5 (2020)</u></b></p> <ul style="list-style-type: none"> <li>• Issue awards from release of Soft Cost Innovation solicitation.</li> </ul> <p><b><u>Milestone 6 (2020) - Complete</u></b></p> <ul style="list-style-type: none"> <li>• Contract with consultants to provide legal and technical support for the initial program design and launch of the Build Ready initiative.</li> </ul> <p><b><u>Milestone 7 (2021)</u></b></p> <ul style="list-style-type: none"> <li>• Compile and publish a document of all case studies to highlight best soft cost reduction strategies and clean energy-friendly communities.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>• Communication and collaboration among market stakeholders has demonstrably improved.</li> </ul>

<sup>16</sup> Soft cost solutions, tools and resources may include consumer education and protection documents; a model PILOT agreement and calculator; decommissioning guidance; customer acquisition studies; research on customer management and billing; GIS siting resources for AHJ officials; and factsheets on issues relevant to current market issues.

	<ul style="list-style-type: none"> <li>• Innovative soft cost research and pilot projects have found new ways for market stakeholders to reduce soft costs, and the soft cost solutions developed have been deployed into the market.</li> <li>• AHJ officials' awareness of and capability to efficiently manage clean energy development in key markets has improved.</li> <li>• Project delays and failures related to local issues are significantly reduced for LSR projects.</li> <li>• The development process is accelerated for communities that are supportive of LSR development.</li> <li>• A self-sustaining network of communities is established for information-sharing and support of LSR siting without NYSERDA involvement.</li> <li>• Host community satisfaction with LSR projects increases</li> <li>• Per-watt distributed solar soft costs in New York State have been meaningfully reduced, with a goal of a 20% reduction by 2020 (relative to a 2016 baseline study).</li> </ul>
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21.3.5 Relationship to Utility/REV

<p><b>Utility Role/Coordination Points</b></p>	<ul style="list-style-type: none"> <li>• The Joint Utilities will serve as key partners in soft cost reduction activities, especially on interconnection issues, customer data mining, customer management and billing, and identifying constrained areas of the grid to inform clean energy deployment. NYSERDA will build off its extensive collaboration with the Joint Utilities via the Interconnection Policy Working Group and the Interconnection Technical Working Group.</li> <li>• Utilities may also serve as pilot and demonstration project partners to vet and scale soft cost solutions. The State Interconnection Ombudsmen will continue to facilitate active and ongoing collaboration between the Joint Utilities and clean energy developers.</li> <li>• The activities described here will play an integral role in assisting the State's ongoing efforts to address DER interconnection issues. As such, it will contribute to other activities both internal and external to NYSERDA. The activities will: <ul style="list-style-type: none"> <li>○ Coordinate closely with the NYS interconnection working groups.</li> <li>○ Integrate with the work of the NYS Interconnection Ombudspersons.</li> <li>○ Consider and support related policy imperatives (e.g. REV Connect, REV pilots, and NY Prize) to ensure optimal leverage of time and resources.</li> </ul> </li> </ul>
<p><b>Utility Interventions in Target Market</b></p>	<ul style="list-style-type: none"> <li>• The Joint Utilities are currently implementing the Interconnection Management Plan and Cost Allocation Mechanism, which the Commission approved on January 25, 2017. The purpose of the Interconnection Management Plan is to clear inactive projects from the utilities' interconnection queues and allow more advanced projects to progress to construction. The purpose of the Cost Allocation Mechanism is to split grid upgrade costs among all solar developers benefiting from them. These working groups and the soft cost solutions they developed provide a model for future Clean Energy Siting &amp; Soft Cost Reduction collaborations.</li> <li>• The Joint Utilities are coordinating with solar developers and customer management companies to allocate net metering credits and manage ratepayer participation in CDG projects. Opportunities may exist to reduce soft costs by streamlining these operations.</li> </ul>



### 21.3.6 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments		----- Commitments Plan -----						
Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
Incentives and Services	1,600,000	-	114,070	742,965	742,965	-	-	-
Implementation	386,075	286,075	38,382	61,618	-	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-
Tools, Training and Replication	6,808,925	569,547	3,452,047	1,393,665	1,393,665	-	-	-
Business Support	-	-	-	-	-	-	-	-
<b>Total</b>	<b>8,795,000</b>	<b>855,622</b>	<b>3,604,499</b>	<b>2,198,248</b>	<b>2,136,630</b>	-	-	-

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

Considering the new Value of Distributed Energy Resources (VDER) order and evolving solar market needs, NYSERDA plans to complete a comprehensive assessment of its budgetary commitments and remaining funds under the NY-Sun program. This will include an assessment of the MW Block program as well as the need for the remaining Program Implementation budget. Once the assessment is finalized, NYSERDA will recommend funding reallocations for the NY-Sun program. Some funding from NY-Sun may be available for Clean Energy Siting & Soft Cost Reduction activities to offset the current budget in Appendix B. NYSERDA will then file an amendment to this investment plan chapter specifying the budget revisions for such activities. Clean Energy Fund resources provided under this investment plan will allow NYSERDA to immediately address the market barriers described herein.

### 21.3.7 Progress and Performance Metrics

Appendix B provides the projected participation associated with this initiative’s projects.

The investment in LSR soft cost reduction will not have any direct, near-term benefits in energy efficiency, clean energy generation or CO2 emission reductions. Reducing project costs related to LSR development will support the achievement of the Clean Energy Standard goals and therefore the benefits from reducing LSR soft costs will be included in the evaluation of benefits resulting from the Clean Energy Standard.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

Impact Evaluation will be completed for the NY-Sun portfolio, and will include solar projects developed under the Clean Energy Siting & Soft Cost Reduction initiative. This initiative will support NY-Sun and its efforts to complete current and future solar projects in the MW Block Incentive Program. This investment plan does not claim direct benefits in addition to those already accounted for by NY-Sun. Accordingly, benefits impacts are not included herein.

### 21.3.8 Fuel Neutrality

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>This program will not be offered on a fuel-neutral basis.</li> </ul>
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### 21.3.9 Performance Monitoring and Evaluation Plans

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below. Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <ul style="list-style-type: none"> <li>NYSERDA will monitor standard output metrics of all activities described above, including the creation and activities of the Soft Cost Working Group, the procurement and provision of technical assistance services, and the administration of funding opportunities. Funds may be redirected (as needed) to ensure continued progress against program goals.</li> </ul> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"> <li>Market Evaluation draws on the theory of change of the related logic model and will include baseline and longitudinal measurement of key indicators of success.</li> <li>Baseline measurements of key performance indicators are in place based on the 2016 study of solar soft costs in New York State. The study will be updated in 2019 to track progress.</li> <li>Regular updates to key performance indicators and measurement of market change, including the number of soft cost solutions developed and deployed, and the number of AHJs recipients of technical assistance services, will occur once the SMA is launched.</li> <li>Sources of data will include NYSERDA tracking data, public and commercially available data, balance of system research conducted by the national labs and other organizations (e.g., GTM Research), and primary data collection through surveys of key market stakeholders, including AHJs, solar developers and the Joint Utilities.</li> <li>A formal Market Evaluation is not planned for LSR as part of this initiative, beyond aspects addressed in the Test-Measure-Adjust Strategy.</li> </ul> <p><b><u>Impact Evaluation/Field Verification</u></b></p> <ul style="list-style-type: none"> <li>Impact Evaluation will be completed for the NY-Sun portfolio as a whole. NYSERDA will develop an approach to identify these projects in the NY-Sun portfolio and to represent them in the evaluation.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Impact evaluation/field verification is not planned for LSR wind technology.</li> </ul>
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## 21.4 Pay for Performance

### 21.1.1 Overview

<b>Present Situation</b>	<ul style="list-style-type: none"> <li>• Utilities and NYSERDA currently secure energy savings from small and medium sized commercial and residential customers primarily through measure-level rebate offerings with program payments generally set as a cost share, and with estimated savings based on deemed<sup>17</sup> results. Many energy efficiency businesses across the country have structured their customer offerings and built business models around such utility programs.</li> <li>• This approach has several limitations: (i) performance risk is on the utility, and by extension the ratepayers, (ii) contractors are not rewarded or responsible for project performance, and (iii) the current model constrains marketplace innovation in search of the most cost-effective and most market responsive solution.</li> <li>• While Pay for Performance (P4P) structures or shared savings contracts have been successfully employed with larger customers, their potential to drive scale with smaller customers has been untapped.</li> </ul>
<b>Intervention Strategy</b>	<ul style="list-style-type: none"> <li>• P4P is designed to respond to two observations: <ul style="list-style-type: none"> <li>○ An energy service contract that guarantees lower cost of energy with little or no money down, with the risk of under-performance borne by the service provider, is a highly compelling value proposition to customers.</li> <li>○ A performance-based structure, where the risk of underperformance is borne by the service provider, is the most public interest aligned contract structure for rate-payer funded approaches.</li> </ul> </li> <li>• At the core of a P4P model is the contractual alignment of the performance-based requirements between the program administrator and the service provider, as well as the corresponding services and requirements between the service provider and the customer, serving to transfer risk and to align payments with performance.</li> <li>• The P4P pilot is anticipated to consist of three phases, with each initiated approximately one year apart. Each phase is anticipated to consist of one or more solicitations for aggregators with selected aggregators having approximately two years to enroll customers and receiving performance payments for up to five years, resulting in a pilot timeline of seven to ten years. It will prove out the concept and establish practical approaches to key features, including: <ul style="list-style-type: none"> <li>○ Timing and level of payments that are aligned as much as possible with delivery of savings</li> <li>○ Mechanics that incentivize deeper energy savings and prevent excess attention to low-hanging fruit, such as lighting</li> <li>○ Stability and certainty to allow service providers to invest in their business models and in their project pipelines</li> <li>○ Flexibility to allow service providers to create and adapt approaches and offerings in response to learning and to market evolution</li> </ul> </li> </ul>

<sup>17</sup> Deemed savings are a set of predetermined savings values for efficiency measures that are developed from commonly accepted data sources and analytical methods and maintained by states or regional bodies.

	<ul style="list-style-type: none"> <li>○ Streamlined and efficient verification and evaluation approaches that ensure that savings are credible</li> <li>● The P4P Pilot will be: <ul style="list-style-type: none"> <li>○ Directed upstream at aggregators and large contractors</li> <li>○ Initially focused on small and medium commercial and single-family residential sectors</li> <li>○ Designed and implemented with utilities</li> <li>○ Designed to allow solutions providers to innovate, reduce costs, and increase customer value</li> </ul> </li> <li>● An objective of the pilot is to provide the market with a flexible program approach, as well as increasing market understanding of risk and confidence in P4P, which will allow costs to decline to a point that is more cost effective than comparable existing programs prior to utility adoption.</li> <li>● The P4P strategy will utilize the CalTRACK methodology to measure energy savings. CalTRACK was originally developed in California through a stakeholder process with funding and leadership from the California Energy Commission, California PUC, and PG&amp;E. The methods define how to calculate site-based, weather-normalized, metered energy savings by comparing an existing conditions baseline to post-retrofit data from utility meters. CalTRACK supports P4P programs by tracking metered savings using calculations that are transparent and replicable. When all parties use the same standardized set of methods for calculating energy savings, a robust energy efficiency market is possible.</li> <li>● By calculating savings from meter data, the P4P strategy will experience more accurate savings estimates and measurements, and higher realization rates than existing programs. Past evaluations have established realization rates of 35-65% for residential programs and 58-80% for small commercial programs.<sup>18</sup></li> <li>● For a visual representation of this strategy, reference the flow chart entitled “Logic Model: Pay for Performance,” which can be found in Appendix A.</li> </ul>
<b>Goals</b>	<p>Test P4P’s ability to:</p> <ul style="list-style-type: none"> <li>● Achieve customer uptake through simpler, less risky offerings</li> <li>● Deliver reliable savings to the customer and system</li> <li>● Measure the savings reliably and credibly</li> <li>● Grow the base of energy efficiency service providers and financiers</li> <li>● Begin to determine whether such an approach can work at cost-effective compensation levels for steady state post-pilot programs</li> <li>● Begin to determine key parameters and contract terms for steady state post-pilot programs</li> </ul>
<b>State Energy Plan/Clean Energy Standard Link</b>	<ul style="list-style-type: none"> <li>● The 2015 State Energy Plan identifies buildings as a major source of energy use and greenhouse gas (GHG) emissions in the State. This strategy will reduce energy consumption and GHG emissions associated with buildings, contributing to State Energy Plan goals to reduce GHG emissions by 40% and to implement a 600 trillion BTU increase in statewide energy efficiency.</li> <li>● This initiative also supports achievement of the Clean Energy Standard goal for renewable resource electric generation (50% renewable electric generation by 2030 – “50 by 30”) by reducing the overall electric load, and therefore the amount of renewables necessary to meet the 50 by 30 goal.</li> </ul>

<sup>18</sup> NYSERDA evaluation studies and “Small Business Direct Install Program Evaluation Review Final Report” prepared for the E<sup>2</sup> Working Group dated January 30, 2015.

	<ul style="list-style-type: none"> <li>The initiative supports the “New Efficiency: New York” target and strategy announced in April 2018.</li> </ul>
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21.1.2 Target Market Characterization

<p><b>Target Market Segment(s)</b></p>	<ul style="list-style-type: none"> <li>Initially, residential and small-to-medium commercial customers with average annual peak demand under 300kW. The pilot will target customers with utility account history capable of supporting baseline calculations. Target market segments may be expanded in later pilot phases.</li> <li>The first-year pilot is expected to target commercial customers in Staten Island and Westchester and residential customers in central New York and Clifton Park. The commercial pilot will leverage the Con Ed AMI build out in Staten Island and Westchester, and the residential pilot will leverage the National Grid AMI demo in Clifton Park.</li> <li>These target markets have been historically expensive to reach; however, the size of the market is significant - warranting exploring strategies such as P4P which could reduce customer acquisition costs. (The average \$/ton to reach small commercial customers in Con Ed’s territory has been approximately \$55/ton; the average \$/ton to reach residential customers in upstate New York through NYSEERDA and utility programs has been approximately \$80/ton. These values do not factor in historically low realization rates.)</li> </ul>
<p><b>Market Participants</b></p>	<p>Market participants include:</p> <ul style="list-style-type: none"> <li>Aggregators</li> <li>Contractors and service providers</li> <li>Utilities</li> <li>End use customers, namely building owners, leaseholders (utility customers who can authorize the installation of energy efficiency packages), and homeowners</li> <li>Financiers and insurers</li> </ul>
<p><b>Market Readiness</b></p>	<ul style="list-style-type: none"> <li>The Energy Efficiency Procurement and Markets working group of the Clean Energy Advisory Council recommended conducting P4P pilots that make use of meter-based data for assessing energy savings in its 2017 report.</li> <li>PG&amp;E in California launched its residential P4P program in 2018. Energy Trust of Oregon is currently developing a P4P program that will launch in 2019. New York, California and Oregon plan to use the same methodology to measure savings and administer their P4P programs. These efforts in other states are spurring industry discussion and interest at a national level from market actors and potential aggregators in P4P as a viable solution for addressing traditional program barriers, increasing energy efficiency adoption, and achieving clean energy goals.</li> <li>Potential aggregators and contractors have actively participated in stakeholder sessions and indicated that they are interested in and able to participate in a P4P pilot in New York. Targeting efforts have identified approximately ten residential and ten commercial potential aggregators for Phase 1.</li> </ul>

	<ul style="list-style-type: none"> <li>Multiple stakeholders are currently participating in the CalTRACK 2.0 Methods working group<sup>19</sup> to develop updates to the existing CalTRACK methods<sup>20</sup>, as well as the development of methods and policy guidance for hourly savings, portfolio load shape, and non-residential sectors. These updates are meant to further align the CalTRACK framework with the needs and requirements of future P4P programs, energy efficiency procurement and investment, and ensure all participants are measuring savings in the same way.</li> <li>In 2016-2017, NYSERDA conducted a feasibility study to test the CalTRACK methodology. Weather normalized electric and natural gas gross energy savings were calculated for a 2007-2011 Home Performance with Energy Star data set.<sup>21</sup> It was found that calculated savings from this study were similar to previous NYSERDA impact evaluation results despite methodological differences.</li> </ul>
<b>Customer Value</b>	<ul style="list-style-type: none"> <li>Customers value lower energy bills and investments that deliver on promised results. If aggregators only get paid when their customers save energy on the bill, they are motivated to deliver high performing projects. This aligns aggregator motivations with customer expectations and needs.</li> <li>Customers also value low risk mechanisms to save energy such as those offered by low, or no up-front, cost service arrangements.</li> <li>Aggregators value a results-driven approach that offers service package flexibility and a predictable and investable cash flow. They also value simplicity in program design including streamlined measurement and verification. They greatly value a services-based approach, including those that create longer term relationships with their customers.</li> <li>Utilities value credible, measured energy efficiency results.</li> </ul>

21.1.3 Stakeholder/Market Engagement

<b>Stakeholder/Market Engagement</b>	<ul style="list-style-type: none"> <li>NYSERDA held well-attended stakeholder meetings in September 2017 and February 2018 (over three dozen organizations participated) to solicit feedback on design elements of the P4P pilot, as well as presented the P4P pilot at a session attended by approximately 50 people at the Home Performance Coalition conference in February 2018.</li> <li>NYSERDA has also engaged in dozens of individual interviews with market actors including service providers, finance entities, and contractors.</li> <li>NYSERDA will continue to seek feedback from market participants on design at the various stages of development. Additionally, NYSERDA will be working with the Green Bank to convene market participants to gather additional input on Green Bank financing to support P4P models.</li> </ul>
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<sup>19</sup> Working group members include individuals representing Build It Green, California Energy Commission, California Public Utilities Commission, Department of Energy, DNV GL, E4TheFuture, Energy Savvy, Energy Trust of Oregon, ERS, Home Energy Analytics, Lawrence Berkeley National Laboratory, MCE Clean Energy, National Renewable Energy Laboratory, National Resource Defense Council, NMR Group Inc, Noresco, Northeast Energy Efficiency Partnerships, Open EE, Opinion Dynamics, PG&E, Rocky Mountain Institute, Sacramento Municipal Utility District, SBW Consulting, Sempra Utilities, Southern California Edison, Tierra Resource Consultants, TRC Solutions, and University of California Berkeley.

<sup>20</sup> CalTRACK 1.0 calculates site-based, weather-normalized, metered energy savings from an existing conditions baseline applied to single family residential retrofits using data from utility meters. CalTRACK 2.0 framework will include updates to existing CalTRACK methods as well as the development of methods and policy guidance for hourly savings, portfolio load shape, and non-residential sectors.

<sup>21</sup> Results are planned to be made available on Open NY.

## 21.1.4 Theory of Change

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>Low customer uptake of energy efficiency in the market.</b> Low penetration of energy efficiency in the market will be addressed by allowing aggregators to create offerings with customer uptake in mind and by providing flexibility for aggregators to adjust offerings based on customer uptake and needs, potentially including no-money down type service models.</li> <li>• <b>High customer acquisition costs.</b> High customer acquisition costs will be addressed by leveraging utility data to assess customer suitability for aggregators to target their offerings.</li> <li>• <b>Site-level energy savings are highly variable and have a lower confidence than portfolio level savings.</b> If projects are aggregated, and savings calculations are performed at the portfolio level, confidence generally increases as more projects are added to the portfolio. This portfolio approach should increase the confidence levels required to stimulate third-party investments.</li> <li>• <b>Lack of standard methodology for measuring normalized energy savings in a consistent and credible way.</b> The market currently uses many different models and methods for calculating energy savings. Therefore, there is a lack of data for potential project aggregators and investors to leverage when judging how they would be compensated for completing energy efficiency work. This barrier will be addressed by use of the CalTRACK methodology in the pilot and participation on the CalTRACK methods working group.</li> <li>• <b>Lack of market for procuring energy efficiency.</b> Currently energy efficiency cannot be sold to a utility in a way that renewable energy can be sold through renewable energy credits. This will be addressed by procuring energy efficiency from aggregators through the phases of the pilot, creating a market-based value, allowing energy efficiency savings to be monetized as a distributed energy resource.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If energy efficiency savings are procured from aggregators who can create offerings designed for customer uptake, then aggregators will innovate on current business models.</li> <li>• If a program administrator establishes a multi-year price signal for energy efficiency, and makes performance payments for portfolios of projects as savings are measured over time, then:             <ul style="list-style-type: none"> <li>○ Aggregators will develop customer offerings that result in persistent efficiency savings</li> <li>○ Increased private investment in energy efficiency will occur</li> </ul> </li> <li>• If a program administrator, with utility co-administrators, employs standardized measurement of energy savings in a P4P model along with AMI, then data will be available to increase confidence in energy efficiency as a load-shaping and distributed energy resource, potentially leading to new market opportunities.</li> <li>• If NYSERDA and utility co-administrators develop a standardized P4P framework, then:             <ul style="list-style-type: none"> <li>○ Additional utility administrators will adopt the P4P model</li> <li>○ Successful aggregators will expand to new territories</li> </ul> </li> <li>• If P4P is implemented at scale, then increased customer uptake and reduced costs for program administration, evaluation, and customer acquisition will be realized.</li> </ul>
<p><b>Activities</b></p>	<p><b>Pilot</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will work with utilities to pilot the P4P approach to prove out the concept and establish practical approaches to key requirements including:             <ul style="list-style-type: none"> <li>○ Timing and level of payments that are aligned as much as possible with delivery of savings</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Mechanics that prevent excess attention to low-hanging fruit, such as lighting</li> <li>○ Stability and certainty to allow service providers to invest in their business systems and project pipelines</li> <li>○ Flexibility to allow service providers to adapt approaches and offerings in response to learning and market evolution</li> <li>○ Streamlined and efficient evaluation approaches that ensure that savings are credible</li> </ul> <ul style="list-style-type: none"> <li>● NYSERDA and its utility co-administrators will issue solicitations over the 2019-2021 timeframe to select qualified aggregators.</li> <li>● Selected aggregators will then work with partners and contractors for a sufficient delivery period (i.e. up to two years) to enlist customers to adopt measure packages and services that create customer value.</li> <li>● Aggregators will be compensated over a period of time (up to five years) for portfolio performance of normalized metered energy savings, through a public-interest-aligned contract structure where performance risk is borne by the aggregator.</li> <li>● The different pilot phases will be designed with utility co-administrators and informed by market feedback. Subsequent phases may include non-metered fuels, such as oil, and may provide additional incentives for temporal or locational demand reduction, as well as potentially focusing on new sectors such as low-to-moderate income or multifamily residential.</li> <li>● NYSERDA will also collaborate with the New York Green Bank to issue an energy efficiency financing Request for Proposals that will support P4P.</li> </ul> <p><b>Adopt a methodology for measuring, tracking, and storing the data</b></p> <ul style="list-style-type: none"> <li>● NYSERDA will issue a solicitation to procure an effective M&amp;V software solution, which will be utilized to calculate energy savings and associated payments for administration of the pilot.</li> <li>● The pilot will adopt the CalTRACK methodology for calculating energy savings.</li> </ul> <p><b>Engage and educate market</b></p> <ul style="list-style-type: none"> <li>● NYSERDA and utility co-administrators will educate relevant market actors, including aggregators, customers, contractors, and financiers on the P4P approach and pilot results through stakeholder meetings, public events, conferences, and webinars.</li> <li>● Advanced M&amp;V work will be completed to compare pre- and post-intervention models to determine success in achieving results and provide confidence in energy savings.</li> <li>● NYSERDA will disseminate aggregated and anonymized pilot performance data to the market by making it available on Open NY.</li> </ul>
<b>Key Milestones</b>	<p>A total of three phases are anticipated over the 2018-2021 time period, with similar milestones for each phase. Future phases of the pilot may involve new utility co-administrators, expanded geographies, additional customer segments, and will test additional P4P use cases.</p> <p><u>Milestone 1 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>● Release key pilot design parameters for stakeholder feedback and complete P4P pilot design.</li> </ul> <p><u>Milestone 2 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>● Make available historical program performance data utilizing CalTRACK results.</li> </ul> <p><u>Milestone 3 (2018) - Complete</u></p>



	<ul style="list-style-type: none"> <li>Release RFP and execute contract to procure advanced measurement and verification software solution.</li> </ul> <p><u>Milestone 4 (2018) - Complete</u></p> <ul style="list-style-type: none"> <li>Release Phase 1 procurement document(s) with utility co-administrators to solicit aggregator bids.</li> </ul> <p><u>Milestone 5 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>Launch commercial sector pilot.</li> </ul> <p><u>Milestone 6 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>Release procurement for Portfolio Managers targeting the residential sector with utility co-administrator.</li> </ul> <p><u>Milestone 7 (2021)</u></p> <ul style="list-style-type: none"> <li>Launch residential sector pilot.</li> </ul>
<b>Goals Prior to Exit</b>	<ul style="list-style-type: none"> <li>Customers obtain deeper energy savings and low or no upfront cost arrangements.</li> <li>Risks and business plan viability related to the P4P approach are better understood by the market, resulting in declining bid prices and overall costs to operate P4P falling below similar program averages.</li> <li>Utilities adopt a P4P approach to energy efficiency after the initial pilot.</li> <li>Customer, investor, aggregator, contractor, and utility confidence in expected savings improves due to available data.</li> <li>Sufficient use case testing of different scenarios involving P4P energy efficiency, positioning the strategy for scale and longer term, steady state, utility adoption under REV.</li> </ul>

21.1.5 Relationship to Utility/REV

<b>Utility Role/Coordination Points</b>	<ul style="list-style-type: none"> <li>For the initial phase, NYSERDA is working with Con-Edison (small commercial) and National Grid (residential) on the design and implementation of the pilot. Memorandums of Understanding are currently under development.</li> <li>NYSERDA is also in active discussions with other utilities about similar partnerships on the later phases of the pilot.</li> <li>Forms of P4P or auction-type efforts have been in the market previously such as the commercial offerings of ConEdison Energy Efficiency Auction Program and ConEdison Brooklyn Queens Demand Management Demand Response Program. Results and lessons learned will be considered in the design and implementation of P4P.</li> </ul>
<b>Utility Interventions in Target Market</b>	Existing, traditional utility equipment rebate programs offer custom and prescriptive incentives to the targeted sectors. P4P participants will not be eligible for these traditional utility rebate programs.

21.4.1 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments

Funding Commitments		----- Commitments Plan -----						
Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
Incentives and Services	48,260,900	-	8,106,666	6,000,000	14,688,000	12,582,234	6,884,000	-
Implementation	4,245,805	1,347,298	733,108	713,270	721,521	460,578	192,530	77,501
Research and Technology Studies	-	-	-	-	-	-	-	-
Tools, Training and Replication	3,250,004	1,935,220	500,000	814,784	-	-	-	-
Business Support	-	-	-	-	-	-	-	-
<b>Total</b>	<b>55,756,709</b>	<b>3,282,518</b>	<b>9,339,774</b>	<b>7,528,054</b>	<b>15,409,521</b>	<b>13,042,812</b>	<b>7,076,530</b>	<b>77,501</b>

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B alongside expected acquired benefits. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

### 21.4.2 Progress and Performance Metrics

The anticipated commitment benefits totals for the initiative with respect to CEF Order target metrics is as follows:

Benefit Commitments

Direct Benefit (2016-2025)	Plan Total	Indirect Benefit (2016-2030)	Plan Total
Energy Efficiency MWh Annual	124,832	Energy Efficiency MWh Annual	5,394
Energy Efficiency MMBtu Annual	202,512	Energy Efficiency MMBtu Annual	7,940
Renewable Energy MWh Annual	-	Renewable Energy MWh Annual	-
CO2e Emission Reduction (metric tons) Lifetime	1,018,261	CO2e Emission Reduction (metric tons) Lifetime	43,637
Participant Bill Savings Lifetime	264,277,443		
Leveraged Funds	117,010,000		

Benefits summarized in Appendix B represent the plan for acquiring impacts through completed projects or activities.

Benefits listed as direct, are near term benefits directly associated with this initiative’s projects. These benefits will be quantified and reported on a quarterly basis and will be validated through later evaluation.

Benefits listed as indirect represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+ ) of the years noted in the Appendix and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented above and in Appendix B are not discounted, however NYSERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation

In addition, NYSERDA will also assess the following broad outcomes:

- Average bid price per phase (by sector)
- % reduction in expended \$/ton CO2 emissions per phase (by sector)

### 21.4.3 Fuel Neutrality

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• Offering this initiative on a fuel neutral basis will allow NYSERDA to achieve savings at a total cost of Commercial = \$518/annual ton and Residential = \$2,118/annual ton, compared to a total cost of Commercial = \$519/annual ton and Residential = \$3,666/annual ton for electric only based on direct cumulative annual carbon reductions.</li> <li>• Customers will be better served if aggregator offerings can address both electric and natural gas energy efficiency needs.</li> <li>• Achievement of NYS carbon goals will require reductions in electricity, natural gas, and fuel oil consumption for mass market customers.</li> </ul>
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### 21.4.4 Performance Monitoring and Evaluation Plans

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below. Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <ul style="list-style-type: none"> <li>• NYSERDA and utility co-administrators will assess the following metrics on a quarterly basis. The information will be utilized to adjust the program in real time as appropriate, as well as to inform future phases of the pilot to maximize initiative effectiveness.             <ul style="list-style-type: none"> <li>○ Number of interested and participating aggregators in Phase 1 of the pilot and bid prices.</li> <li>○ Number of buildings included in each aggregator’s portfolio compared to projections (e.g. NYSERDA estimates, Aggregator bids).</li> <li>○ Number of implemented projects compared to projections (e.g. NYSERDA estimates, Aggregator bids).</li> <li>○ Average sales cycle length for aggregator offerings and appropriateness of the two-year implementation period.</li> </ul> </li> </ul>
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- Following the first year of Phase 1 implementation, an assessment will be conducted to analyze customer uptake, aggregator performance, program parameters, and M&V solutions.
- NYSERDA and utility co-administrators will also assess the overall pilot for lessons learned regarding the effectiveness of the pilot design to inform future pilot phases and any future steady-state programs under REV. Indicators of effectiveness that will be assessed include:
  - Customer uptake
  - Third party capital deployed
  - Consistent and credible measurement of savings
  - Pilot rules
  - Overall cost-effectiveness

**Pay for Performance Strategy M&V**

- M&V of the energy savings resulting from the energy efficiency projects implemented under the P4P pilot will be completed by an advanced M&V software solution employing the CalTRACK methodology.
- Additional M&V functionality may be built into the software solution during the P4P initiative to implement updates to the CalTRACK methodology, improve the accuracy of NMEC savings estimates, or accommodate new evaluation use cases. M&V work will be funded out of the Implementation Support budget included in this plan.

**Market Evaluation**

- Market Evaluation will draw on the logic model and will include baseline and longitudinal measurement of key indicators of market success.
- Baseline measurements of key performance indicators will occur within one year of strategy approval, including customer participation, market participation (aggregators, contractors, etc.), utility participation, and number of datasets published. Current levels of participation, satisfaction, and expenditures in existing residential and small to medium commercial programs (utility and NYSERDA programs), as well as selected proposals will be used to assist in establishing P4P baselines.
- Regular (e.g., quarterly) updates to key performance indicators and measurement of market change, including number of participating projects, administrative costs for both project and program implementors, and customer satisfaction with aggregators and the P4P initiative.
- Surveys or interviews will be conducted to assess additional research questions as necessary. Topics addressed in these research questions may include:
  - Effectiveness of pilot design and implementation (e.g., programmatic terms and conditions, clarity of solicitation)
  - Customer reactions to pilot participation
  - Barriers to adoption of energy efficiency offerings
  - Participation of third party capital
  - Successful business model innovations
  - Sufficiency of data made available to support the pilot
- Sources of data will include aggregator project data, public and commercially available data, and primary data collection through surveys of key market actors.

**Impact Evaluation/Field Verification**

- As noted above, energy savings resulting from aggregator projects will be measured using an advanced M&V software solution. These savings

	<p>estimates will in turn be used to calculate CO<sub>2</sub> savings. Independent impact evaluation/field verification will rely on measurement and verification conducted by the advanced M&amp;V software solution and will verify the results of this analysis as needed.</p> <ul style="list-style-type: none"> <li>• Targeted field verification may be conducted as appropriate to verify that the measures reported to NYSERDA/utility co-administrators have been installed. In the case of measures for which there is an applicable efficiency standard, inspectors will verify that the measures meet or exceed code requirements.</li> <li>• Field verification will be conducted as appropriate for projects with savings results that significantly under- or overperform (e.g. +/-50%) compared to aggregator estimated savings and/or other projects in the aggregator's portfolio.</li> <li>• The site-based, weather normalized metered energy savings will be used in evaluation of the P4P pilot. Impact evaluation may be conducted to control for other effects, such as exogenous factors like economic growth or technology adoption or endogenous factors like socioeconomic status. as deemed appropriate.</li> <li>• Replication of P4P business models in New York State, beyond pilot participants, and the resultant energy benefits will also be subject to independent impact evaluation review. The methodology will be determined, as appropriate, based on the level of adoption and technologies involved.</li> <li>• Evaluation M&amp;V may be conducted for a sample of participating spaces/buildings, according to the International Performance Measurement &amp; Verification Protocol (IPMVP) method(s) most appropriate given the improvements made.</li> <li>• Evaluation M&amp;V will rely heavily on the P4P Advanced M&amp;V Platform with input from utility co-administrators.</li> <li>• Data from Field Verification/Impact Evaluation can be used to help lend confidence in the market, especially among other end users.</li> </ul>
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## 21.5 Information Products and Brokering

### 21.5.1 Theory of Change

NYSERDA will work to develop information tools and resources to accelerate customer adoption of energy efficiency and clean energy by reducing project soft costs, including through developing customer targeting tools, value proposition calculators, sponsoring events to draw web-based tool development and analytics firms into the clean energy space, and acquiring, aggregating, and sharing data resources. For a visual representation of this strategy, please reference the flow chart entitled “Logic Model: Information Products & Brokering,” which can be found in Appendix A.

<p><b>Market Barriers Addressed</b></p>	<ul style="list-style-type: none"> <li>• <b>Web-based tool and platform developers and solution providers are not actively engaged in energy markets.</b> Solution providers do not see a clear business case for developing energy efficiency and clean energy products and limited data availability is a barrier to developing innovative business solutions. NYSERDA will highlight the business opportunities for solution providers in these markets by providing funding to get prototype tools built and tested and facilitating match-making between entrepreneurs, energy efficiency and clean energy vendors, and customers.</li> <li>• <b>High customer acquisition costs for clean energy businesses.</b> The high cost of customer acquisition will be addressed through tools and services that will improve lead generation and sales conversion.</li> <li>• <b>Lack of clear energy information for customers.</b> Customers do not have access to clear information that can be used to drive demand and inform energy decisions. The customers’ lack of understanding of the full benefits of energy efficiency and clean energy investments will be addressed through web-based value proposition calculators.</li> </ul>
<p><b>Testable Hypotheses</b></p>	<ul style="list-style-type: none"> <li>• If NYSERDA supports the deployment of web-based targeting tools that incorporate building, customer, and technology specific data, then vendors’ customer acquisition costs will decline through improved sales conversions.</li> <li>• If NYSERDA supports the deployment of value proposition calculators that support comparison shopping and matchmaking, then customer demand for energy efficiency and similar clean energy technologies will increase.</li> <li>• If NYSERDA supports the development of data sharing platforms, then solution providers will utilize the data to launch business initiatives to serve both clean energy businesses and their potential customers.</li> </ul>
<p><b>Activities</b></p>	<p><b>Customer Targeting Tools</b></p> <ul style="list-style-type: none"> <li>• Develop and deploy customer targeting tools for use by vendors to strengthen their ability to identify, cultivate, and convert leads to customers.</li> <li>• The tools will help reduce soft costs for vendors in new and emerging markets, as well as leverage harder to access data sources to provide broader intelligence to more established markets, such as energy efficiency.</li> <li>• NYSERDA will periodically issue solicitations to contract with firms to develop, test, and promote tools targeted at specific technologies and solutions, such as Variable Refrigerant Flow systems or small commercial energy efficiency. At least two solicitations are anticipated over the next three years. The funding will also be used to repurpose or extend existing Customer Targeting Tools such as the one created to support the Heat Pump programs for increased impact.</li> <li>• Initial testing will be completed by providing the tools to NYSERDA approved contractors to test their efficacy at identifying customer leads and conversion to projects. The contracted developer will train the initial contractors on how to utilize the tool to ensure proper use during the testing phase.</li> </ul>

	<ul style="list-style-type: none"> <li>• The NYSERDA funding and support will work to prove the viability and success rate of the tool in finding leads and converting to sales. Once the tool’s capabilities are developed and tested by NYSERDA approved contractors, if proven successful the contracted solution provider will lead the effort to promote the expanded use of the tools and the data assets to contractors throughout NY state.</li> <li>• As part of the solicitation process for selecting a developer of a customer targeting tool, proposers will have to articulate a strategy and tactics for how vendors will be made aware of and supported in accessing the tools, which will be leveraged in promoting their expanded use and self-sustainability as a business service.</li> </ul> <p><b>Value Proposition Tools</b></p> <ul style="list-style-type: none"> <li>• Issue competitive solicitations to select firms to develop, test, and promote value proposition calculators. At least two solicitations are anticipated over the next three years. Value proposition calculators allow potential customers to compare options and develop a customer specific value proposition for investing in clean energy. The calculators will be used by both potential customers and vendors to articulate the value of energy efficiency and clean energy investments, including economics, comfort, and quality of life benefits.</li> <li>• NYSERDA will fund demonstrations of developed tools. As part of the solicitation process, proposers will articulate a strategy for how they will promote and test the tools as a means to increase customer confidence and drive down customer acquisition costs. As an example, a developer could propose to partner with a trade ally to run a targeted promotion campaign to test out how the trade allies’ members interact with the tool.</li> <li>• The initial work will focus on the small and medium commercial sector due to the high cost of customer acquisition and project development and relatively small per project profit potential for vendors in this under-served sector. It will also focus on the potential of identifying and quantifying non-energy benefits to drive greater rates of investment from small and medium sized business owners.</li> <li>• If a tool is successful in the initial demonstration tests, the tools will be further market tested by promoting them to qualified vendors in both NYSERDA and utility programs and potential customers in NYSERDA and/or utility programs to assess whether the tools are successful in driving participation in the initiatives at a lower cost.</li> <li>• For tools that are proven successful through demonstrations and market testing, NYSERDA will support their operation and promote their use through the period of the investment plan unless they displaced by market-based tools serving the same function.</li> </ul> <p><b>Asset Data Matching Pilots and the DER Data Platform Feasibility Pilot</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will work with a qualified contractor and one or more utilities to conduct up to three Asset Data Matching pilots which map building asset data with NYSERDA program data, and Utility program and customer energy usage data in the residential and small commercial sectors.</li> <li>• The Data Matching Pilots will explore the value of aggregated and anonymized data sets for identifying clusters of customer types likely to be well-suited for energy efficiency work and therefore, responsive to marketing efforts.</li> <li>• NYSERDA will work with a qualified contractor, one or more utilities and other stakeholders to develop a pilot to explore the feasibility of a DER Data Platform. This Pilot DER Data Platform shall contain both anonymized customer and system data useful to developers for planning and developing energy storage and other types of DER.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Results of pilots will be analyzed to determine which pilots have demonstrated scalable value and should be pursued further, as well as whether the resulting tools should be coordinated or combined to avoid duplicative development and maintenance of tools.</li> </ul> <p><b>Hackathon</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will co-host hackathons - events that bring together web-based tool and platform development firms and data analytics solution developers for a design competition where firms compete to develop web-based tools that address barriers to customer adoption of energy efficiency and clean energy.</li> <li>• The competition will award prize money to the winning teams, as well as support from NYSERDA for in-market demonstrations. Beyond these supports, NYSERDA will network with and connect the best submissions with potential investors, customers, and with relevant NYSERDA business development programs (such as incubators) if the company is nascent.</li> <li>• The goal of the events will be to foster 6-12 concepts, over the course of three hack-a-thons, for web-based tools, resources and solutions that can be further developed to address an opportunity or challenge in the targeted market or technology area to help overcome barriers to adoption of energy efficiency and clean energy.</li> <li>• NYSERDA will partner with other entities for these events to tie them more closely to market needs and to enhance the potential matchmaking opportunities between vendors looking to for new business opportunities and customers looking for solutions. The first hackathon will focus on identifying solutions to needs in the commercial real estate sector. NYSERDA will leverage a current sponsorship and collaboration with REBNY’s PropTech Challenge<sup>22</sup> to drive results in this market area. Based on learnings from the initial real estate focused events, NYSERDA will expand to other areas, such as the small commercial and residential sectors.</li> <li>• NYSERDA will contract with an implementation consultant to support the design and implementation of the events.</li> </ul> <p><b>Acquire and share data and develop data platforms</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will acquire, publish, and/or share on an open platform data sets pertaining to building characteristics, climate data, NYSERDA project data, utility service data, fuel use and other relevant data that can be utilized by energy efficiency and clean energy vendors in New York State to develop information tools and resources<sup>23</sup>. The data published on the open platform will conform to New York State data classification standards for protecting privacy and NYSERDA will follow best practices as employed by Open NY. Where applicable, aggregation and anonymization protocols will be employed to protect privacy.</li> <li>• NYSERDA will make use of existing data platforms wherever possible, such as Open NY for sharing public data and NYPA’s New York Energy Manager platform for certain NYSERDA program data. Specific actions to acquire and share the datasets will include: <ul style="list-style-type: none"> <li>○ Cleaning and publishing additional data sets from NYSERDA and other NYS entities</li> </ul> </li> </ul>
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<sup>22</sup> The PropTech Challenge is a virtual real estate hackathon that encourages the development of cutting-edge solutions to solve challenges faced by today’s leading real estate companies in Blockchain, Operations & Maintenance, Commercial Brokerage, or Architecture Engineering Construction (AEC) & Development.

<sup>23</sup> NYSERDA has already acquired datasets including InfoGroup commercial and residential data, and CoStar commercial real estate property data. In addition, third parties working under NYSERDA’s guidance have compiled New York State real property data, customer demographic and psychographic data.



	<ul style="list-style-type: none"> <li>○ Procuring datasets from private curated sources to update and fill gaps in available data</li> <li>○ Identify and aggregate public data that is currently available to make it more easily accessible to web-based tool and development firms interested in the energy efficiency market.</li> <li>● The data resources can also be leveraged to validate the value proposition for clean energy and energy efficiency and drive specific analysis. One potential use of the data is as an analysis of NYSERDA audit data to identify common measure packages with consistent levels of savings to use in developing standard measure packages for a variety of offerings.</li> </ul>
<b>Key Milestones</b>	<p><u>Milestone 1 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Solicitation issued to support Asset Data Matching.</li> </ul> <p><u>Milestone 2 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Solicitation issued to support DER Data Platform pilot.</li> </ul> <p><u>Milestone 3 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Roll out heat pump Customer Targeting Tool to 100 contractors outside heat pump program, including residential EE contractors and initial P4P aggregators.</li> </ul> <p><u>Milestone 4 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Issue award for the development of value proposition calculator to support adoption of energy efficiency in the small commercial sector.</li> </ul> <p><u>Milestone 5 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● Host first hackathon, with a focus on identifying solutions that overcome barriers to adoption of energy efficiency and clean energy for property managers of commercial, multifamily, and industrial building portfolios. Attract 75 proposals. Issue 1-4 awards to support market demonstration of solutions developed by winners.</li> </ul> <p><u>Milestone 6 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>● DER Data Platform pilot is operational.</li> </ul> <p><u>Milestone 7 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>● Issue award for the development of customer targeting tool to support adoption of energy efficiency.</li> </ul> <p><u>Milestone 8 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>● Initial Asset Data Matching Pilot(s) are completed.</li> </ul> <p><u>Milestone 9 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>● Asset Data Matching pilots and DER pilot platform testing completed with recommendations.</li> </ul> <p><u>Milestone 10 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>● Host second hackathon, with a focus on identifying solutions that overcome barriers to adoption of energy efficiency and clean energy for small-to-medium commercial owners. Attract 175 proposals. Issue 1-4 awards to support market demonstration of solutions developed by winners.</li> </ul> <p><u>Milestone 11 (2021)</u></p>

	<ul style="list-style-type: none"> <li>• Issue award for development of value proposition calculator to support adoption of energy efficiency in the residential sector.</li> </ul> <p><u>Milestone 12 (2021)</u></p> <ul style="list-style-type: none"> <li>• Host third hackathon, with a focus on identifying solutions that overcome barriers to adoption of energy efficiency and clean energy for residential home owners. Attract 250 proposals. Issue 1 -4 awards to support market demonstration of solutions developed by winners.</li> </ul> <p><u>Milestone 13 (2022)</u></p> <ul style="list-style-type: none"> <li>• Issue award for customer targeting tool to support adoption of smart building technology.</li> </ul> <p><u>Milestone 14 (2022)</u></p> <ul style="list-style-type: none"> <li>• Issue award for customer value proposition calculator to support adoption of smart building technology.</li> </ul>
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21.5.2 Target Market Characterization

<b>Target Market Segment(s)</b>	<ul style="list-style-type: none"> <li>• The initiative will target web-based tool and platform developers. These firms have the technical capabilities and experience necessary to develop and deliver value proposition calculators, customer targeting tools, and data platforms to the energy efficiency market in New York State.</li> <li>• Other market participants include: <ul style="list-style-type: none"> <li>○ Energy efficiency and clean energy vendors as users of customer targeting tools.</li> <li>○ Homeowners as users of value proposition calculators.</li> <li>○ Small-to-medium business owners as users of value proposition calculators.</li> <li>○ Property management firms as beneficiary of hackathons, and users of value proposition calculators.</li> </ul> </li> </ul>
<b>Market Engagement and Readiness</b>	<ul style="list-style-type: none"> <li>• To date, NYSERDA engagement with web-based tool developers has indicated a strong interest from the market in working on clean energy in New York. An exploratory request for qualifications was issued in April 2018 to build a pool of firms with web-based development experience for tools and platforms, access to curated data that can be applied to clean energy opportunities, and experience in running hackathons and other forms of market engagement. This RFQ received responses from over 50 web-based solution developers and service providers, the majority of whom currently focus on non-energy market such as real estate, automotive, hospitality, and business to business sales. Additionally, a solicitation issued in January of 2018 to develop a heat pump customer targeting tool had strong interest from 84 companies and received 20 bids. The strong response to these offerings indicates that the market is willing and able to apply their skills to energy markets if the opportunity is presented.</li> <li>• Other data points show that customers are ready to utilize such tools. Growing demand for web-based tools and apps to control lighting, heating, and security signals that residential and small commercial customers are interested in new solutions that increase reliability, comfort and health, but may lack knowledge of clean energy products, performance and value. Timing, initial cost, lack of experience and inherent consumer skepticism are still</li> </ul>

	<p>critical barriers to address to increase low adoption rates for energy efficiency improvements and beneficial electrification.</p> <ul style="list-style-type: none"> <li>• There are numerous building and property owner datasets and platforms used in diverse verticals including real estate, automotive, and finance that could be leveraged by the right partners to promote clean energy opportunities, but are not currently widely used in clean energy markets. For example, several firms aggregate property data from tax assessors and others that is used by MLS and other commercial and residential platforms to spur real estate sales and development, which can also be used to provide insights to clean energy opportunities.</li> <li>• NYSERDA also engaged directly with energy efficiency and clean energy vendors serving homeowners and small-medium commercial businesses to gain their feedback on the initiative. They indicated that they see value in their own business data, but lack the skills, resources and market knowledge needed to develop web-based solutions and platforms on their own.</li> <li>• Real Estate Board of New York (REBNY) has sponsored events where firms develop and present ideas to REBNY members on how data can be used to improve building profitability, operations, and sustainability. The events have resulted in a number of solutions that warranted further pursuit, reinforcing the viability of the hackathon model.</li> <li>• NYSERDA will continue to seek feedback from market participants at the various stages of program development, as well as participate in industry working groups such as the Northeast Energy Efficiency Partnership (NEEP), Consortium for Energy Efficiency (CEE), and Renewable Thermal Alliance to identify additional market opportunities.</li> </ul>
<p><b>Relationship to Utility Programs and REV Initiatives</b></p>	<ul style="list-style-type: none"> <li>• The investor owned utilities do not have any similar offering to this market. However, tools and resources developed to support energy efficiency and clean energy vendors and customers will drive customer demand for energy efficiency and clean energy projects, and it is anticipated that many of these projects will take advantage of utility incentives.</li> <li>• NYSERDA will engage NYPA and leverage the New York Energy Manager platform to support this strategy, as appropriate.</li> <li>• Utilities will be invited to participate as judges at the design competitions, as well as to advise NYSERDA on best-value tools and resources to support clean energy and energy efficiency adoption.</li> <li>• NYSERDA will share successful tools and resources with utilities, with the potential for utilities to leverage these tools to increase participation in their programs.</li> </ul>

21.5.3 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments		----- Commitments Plan -----						
Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
Incentives and Services	400,000	50,000	50,000	50,000	250,000	-	-	-
Implementation	556,042	2,429	263,590	100,000	190,023	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-
Tools, Training and Replication	7,543,958	926,363	196,764	1,750,000	1,800,000	2,000,000	870,831	-
Business Support	-	-	-	-	-	-	-	-
<b>Total</b>	<b>8,500,000</b>	<b>978,792</b>	<b>510,354</b>	<b>1,900,000</b>	<b>2,240,023</b>	<b>2,000,000</b>	<b>870,831</b>	<b>-</b>

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B alongside expected acquired benefits. Budgets do not include Administration,

Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented in Appendix B is intended for informational purposes only.

#### 21.5.4 Progress and Performance Metrics

The anticipated commitment benefits totals for the initiative with respect to CEF Order target metrics is as follows:

##### Benefit Commitments

<b>Direct Benefit (2016-2025)</b>	<b>Plan Total</b>
Energy Efficiency MWh Annual	-
Energy Efficiency MMBtu Annual	-
Renewable Energy MWh Annual	-
CO <sub>2</sub> e Emission Reduction (metric tons) Lifetime	-
Participant Bill Savings Lifetime	-
Leveraged Funds	-

<b>Indirect Benefit (2016-2030)</b>	<b>Plan Total</b>
Energy Efficiency MWh Annual	24,030
Energy Efficiency MMBtu Annual	1,670,903
Renewable Energy MWh Annual	-
CO <sub>2</sub> e Emission Reduction (metric tons) Lifetime	2,501,902

Benefits summarized in Appendix B represent the plan for acquiring impacts through completed projects or activities.

Benefits listed as indirect represent the estimated indirect market effects expected to accrue over the longer term as a result of this investment and follow on market activity. The indirect benefits that accrue from this investment will be quantified and reported based on periodic Market Evaluation studies to validate these forecasted values. Market Evaluation may occur within one year (-/+ ) of the years noted in the Appendix and projected future indirect benefits and/or budgets necessary to achieve them may be updated based on the results of market evaluation. Indirect impact across NYSEERDA initiatives may not be additive due to multiple initiatives operating within market sectors. The values presented above and in Appendix B are not discounted, however NYSEERDA has applied a discount of 50% to the overall portfolio values in the Budget Accounting and Benefits chapter.

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

In addition, NYSEERDA will also assess the following broad outcomes:

- Increased participation in NYSEERDA programs, and potentially utility programs, due to tool usage.
- Continued use of tools beyond NYSEERDA investment.

NYSERDA will also track progress towards Goals Prior to Exit, which reflect what progress needs to occur for NYSERDA to exit investment in this area of the market entirely. Goals Prior to Exit for this initiative include:

- Customer targeting tools are adopted by more than 50% of the largest volume energy efficiency and clean energy vendors that participate in NYSERDA programs.
- Value proposition calculators are utilized by at least 20% of customers pursuing an energy efficiency or clean energy projects.
- Curated data is available to the market on an ongoing basis for use by web-based solution providers, clean energy businesses and the public, especially owners of homes and small-to-medium sized businesses.
- 20% of awardees from NYSERDA sponsored hackathons have succeeded in producing viable, market-based solutions.

### 21.5.5 Fuel Neutrality

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• Offering this initiative on a fuel neutral basis will allow NYSERDA to achieve savings at a cost of \$147/annual ton, compared to a cost of \$1,005/annual ton in an electric only scenario.</li> </ul>
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### 21.5.6 Performance Monitoring and Evaluation Plans

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below. Where appropriate, evaluation efforts for this initiative may be combined with other NYSERDA evaluation studies to optimize resources where technologies, market actors, strategy or geographical regions overlap. While serving to reduce and mitigate potentially duplicative evaluation efforts, this approach will also reduce uncertainty in evaluation findings where discrete, initiative-level assessments are otherwise difficult to discern due to such overlaps.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b></p> <p>Management of Critical Success Factors:</p> <ul style="list-style-type: none"> <li>• NYSERDA will employ “beta” testing as a standard practice when developing new tools for the market ensuring that a selected group of vendors or customers use the tools and give feedback on their experience.</li> <li>• NYSERDA will ensure that user experience is collected and used to modify or improve tools before they are released more broadly into the market.</li> <li>• NYSERDA will ensure that a plan for driving traffic to web-based customer tools is a clear and distinct deliverable and will procure resources capable of delivering such traffic as needed.</li> </ul> <p>Responsiveness to outcomes:</p> <ul style="list-style-type: none"> <li>• Assess the number of leads generated in the first six months of the first customer targeting tools.</li> <li>• Assess the number of customers who utilize the customer value proposition calculator in the first six months.</li> <li>• Assess the number of participating firms in the first hackathon.</li> <li>• Interview a sample of customers, energy efficiency and clean energy vendors and web-based tool and platform developer firms regarding use and participation periodically during the intervention.</li> </ul> <p><b><u>Information Products and Brokering Strategy M&amp;V</u></b></p>
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	<ul style="list-style-type: none"> <li>Review and validate customer value proposition calculators and customer targeting tools.</li> </ul> <p><b><u>Market Evaluation</u></b></p> <ul style="list-style-type: none"> <li>Market Evaluation will draw on the logic model and will include baseline and longitudinal measurement of key indicators of programmatic and broader market success.</li> <li>Baseline measurements of key market indicators will provide additional insights that will allow NYSERDA to adjust the strategy. These include but are not limited to the customer acquisition costs for energy efficiency projects and the number of web-based tool and platform developers currently serving NY energy markets. Due to the progressive nature of this initiative, moving to address different sectors of the market over time (e.g., small commercial in 2019 and residential households in 2021), baseline data collection will be timed accordingly to occur as close to the time of tool development as possible. This will support the most accurate baseline measurement and the specificity necessary in the measurements that will enable tracking of progress against the baseline.</li> <li>Regular (e.g., annual or biennial) updates to key performance indicators and measurement of market change, including but not limited to: a survey of vendors to assess the percent reduction in the customer acquisition costs for energy efficiency projects, and continued use of the tools beyond NYSERDA investment.</li> <li>Sources of data include intervention data, public and commercially available data (such as building, and property owner datasets and platforms used in real estate, finance, etc.), and primary data collection through surveys of key market actors.</li> </ul> <p><b><u>Impact Evaluation/Field Verification</u></b></p> <ul style="list-style-type: none"> <li>The final development of tools and the data they produce, along with the disposition of projects, will ultimately determine the impact evaluation methods to be undertaken. Projects that are installed through NYSERDA contractors or programs would have more complete data and could be evaluated using a billing analysis approach and/or site visit. Projects that are not connected directly to NYSERDA through a contractor or program would need to be identified and their impact assessed through data available in the tools and/or evaluation sampling and survey methods.</li> </ul>
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## 21.6 Consumer Awareness

### 21.6.1 Theory of Change

Market adoption of clean heating and cooling technologies and energy efficiency improvements is key to reaching both CEF and broader NYS goals, including achieving 85x50 targets. However, familiarity of these technologies is currently too low to achieve desired market penetration, particularly in areas facing gas demand constraints. These geographies require immediate attention as the lack of access to natural gas limits the energy options in the area and could stall economic development. Combining clean heating and cooling technologies with energy efficiency improvements provides an alternative option to natural gas service not only for homeowners, but also for small-medium-sized businesses and commercial and multifamily real estate developers, building owners, and tenants.

<b>Market Barriers Addressed</b>	<ul style="list-style-type: none"> <li><b>Lack of a single point of entry.</b> Consumers and businesses must currently go to a multitude of locations to learn about the full spectrum of options, programs, and incentives available to them. Providing a centralized online landing</li> </ul>
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	<p>environment will enable consumers to research the opportunities available to them in one easy to find location.</p> <ul style="list-style-type: none"> <li>• <b>Lack of familiarity and understanding of the benefits of energy efficiency.</b> Consumers don't currently understand the full benefits of efficiency, including the potential for cost savings and non-energy benefits such as increased comfort. The awareness campaign will provide targeted information to increase awareness of the benefits.</li> <li>• <b>Lack of awareness and interest in switching to clean heating and cooling technologies.</b> Only approximately 31% of homeowners are aware of air source heat pumps and 38% are aware of ground source heat pumps in Westchester County. Research has shown that consumers that are familiar have higher interest in adopting the technology than those who are only aware, indicating the need for consumer awareness efforts.</li> <li>• <b>Service providers are driven by profit.</b> They'll continue to install the technologies they are most familiar with and won't evolve their business model to incorporate new products without consumer demand. Increasing consumer demand for energy efficiency and clean heating and cooling technologies will increase the likelihood that service providers will install them.</li> <li>• <b>Lack of trust in contractors.</b> Consumers are unlikely to trust contractors when learning about new technologies. Preliminary research suggests that consumers were more likely to trust information from a combination of government and their utility company when hearing about energy new products for their home. The effort will address this lack of trust through awareness outreach co-branded by utilities and NYSERDA and providing information on vetted contractors.</li> <li>• <b>Reliance on Natural Gas.</b> Commercial and Multifamily developers and building owners have not identified an economically viable business case for projects without access to natural gas. Deeper and more collaborative communications are needed to move the needle.</li> </ul>
<b>Testable Hypotheses</b>	<ul style="list-style-type: none"> <li>• If NYSERDA increases consumer familiarity with energy efficiency opportunities and clean heating cooling technologies, then: <ul style="list-style-type: none"> <li>○ The percentage of residents and small/medium businesses interested in switching from their existing HVAC system to a clean heating and cooling system will increase.</li> <li>○ The percentage of residents and small/medium businesses interested in opportunities to make their home or business more energy efficient will increase.</li> </ul> </li> <li>• If NYSERDA increases consumer demand for energy efficiency opportunities and clean heating cooling technologies, then: <ul style="list-style-type: none"> <li>○ The cost and lead time of customer acquisition for energy efficiency and clean heating and cooling service providers will decrease.</li> <li>○ Service providers will be positioned to grow their businesses and spur further adoption.</li> </ul> </li> <li>• If NYSERDA highlights the opportunities available through the combination of utility, NYPA and NYSERDA programs and incentives, and financing options then the economics of building envelope and HVAC upgrades will be more easily understood and appealing to the variety market actors who influence project uptake, increasing the number of projects that move forward.</li> </ul>
<b>Activities</b>	<p><b>Consumer Awareness Campaign</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will develop and conduct a consumer awareness campaign to increase consumer familiarity with energy efficiency and clean heating and cooling technologies that can be adopted in partnership with utilities. The campaign will initially be focused in Westchester county to address natural gas constraints, with the potential for statewide expansion.</li> </ul>

	<ul style="list-style-type: none"> <li>• The awareness and education effort will utilize a combination of broader reaching channels to provide a consistent frequency of message and hyper-targeted channels that will allow for more detailed product messaging. The broader message will highlight and synthesize the value and benefits of available new heating and cooling technologies, energy efficiency, and renewable energy alternatives, while the hyper-targeted channels will be leveraged to communicate detailed messaging for the products and services individuals are most likely to adopt based on their unique characteristics, heating fuel-type, and building typology.</li> <li>• NYSERDA will develop both creative approach and messaging for both channels based on audience and market insights. Creative testing will be conducted to ensure the approach resonates with the targeted audience. To inform the more specific, targeted messaging, NYSERDA will also size and segment the market to identify consumers who are likely to adopt clean energy options. Digital and address-based targeting will be leveraged to reach specific audiences and segments with unique offers.</li> <li>• Communications will also be concentrated during the months leading up to the heating and cooling seasons (September-November and April-June) to align with the decision-making timeframe for upgrade or improvements.</li> <li>• NYSERDA will co-brand the consumer awareness messaging with utilities, and co-market with county governments and local organizations where complementary efforts, channels or assets exist to ensure a seamless customer experience across multiple entities, broaden the reach of the awareness campaign, and ensure consumers can easily access the information, products, and incentives that meet their needs.</li> <li>• To increase the efficacy of the awareness campaign, NYSERDA will leverage existing local resources to increase the likelihood that the messaging is heard and understood. In Westchester existing resources that will be leveraged include, but aren't limited to: <ul style="list-style-type: none"> <li>○ Strategic partnerships such as The Hudson Valley Regional Economic Development Council and Con Edison's Regional Community Affairs Group to extend NYSERDA's local presence and work with trusted community organizations to engage targeted audiences.</li> <li>○ Sustainable Westchester's successful Clean Heating and Cooling Communities campaign. NYSERDA will deliver information sessions at scheduled high turnout events and through local organizations that partner with the campaign.</li> <li>○ Local governments. NYSERDA will work with county media assets (e.g., outdoor, airport signage, newsletter, etc.) in partnership with the County Executive Office to reach prioritized residential and business consumers.</li> </ul> </li> <li>• NYSERDA will leverage both the targeting work and local resources to ensure that disadvantaged communities are appropriately served. Targeting efforts will include clean energy option messages tailored to subsidized multifamily building owners, with the focus on encouraging them to improve the living spaces of their tenants. NYSERDA will also explore targeted channels to reach disadvantaged communities, including partnerships with County Executive Offices to deliver messages through the local county offices that deliver services to low income residents, including ESL segments with native language content.</li> </ul> <p><b>Engage Service Providers</b></p> <ul style="list-style-type: none"> <li>• Proactively engage existing contractors and suppliers so they are informed of energy efficiency and clean heating and cooling technology options and are prepared to respond to consumer interest. This is key to ensuring that all</li> </ul>
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	<p>options are considered when homeowners and building owners are faced with equipment failure.</p> <ul style="list-style-type: none"> <li>• Explore building clean heating and cooling technologies into the curriculum at the Westchester Boards of Cooperative Educational Services (BOCES) and Westchester College, as well as other local education centers, to prepare for increased new technology demands and emerging new job opportunities.</li> </ul> <p><b>Landing Environment</b></p> <ul style="list-style-type: none"> <li>• NYSERDA will develop a centralized online landing environment that will provide a single point of entry for consumers to access and learn about the opportunities available to their home or business, customized to their home or business typology, with links to webpages for all organizations providing services (e.g. contractors, gas utility, electric utility, NYSERDA, etc.).</li> <li>• Marketing and communications from the consumer awareness campaign will drive all parties to the landing environment, enabling consumers to easily research and access the information and opportunities most relevant to them.</li> <li>• The page will also contain links to information on programs and tips for low income residents.</li> </ul> <p><b>Workshops</b></p> <ul style="list-style-type: none"> <li>• Informational workshops for new and existing commercial and multifamily buildings will be conducted in partnerships with trade and professional organizations such as the Business Council of Westchester County and the American Institute of Architects to facilitate more one-on-one discussions for customized solutions.</li> <li>• The workshops will provide tailored technical assistance and holistic solutions to identify the specific resources available to large projects and identify a path forward, working collaboratively with key market actors who have influence over a significant percentage of New York State’s built environment. NYSERDA will also explore partnerships with local organizations serving the low-income population to deliver information workshops to disadvantaged communities.</li> </ul>
<p><b>Key Milestones</b></p>	<p><u>Milestone 1 (2019) - Complete</u></p> <ul style="list-style-type: none"> <li>• Develop public relations and community integration strategy</li> </ul> <p><u>Milestone 2 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Develop communications strategy for contractor, manufacturing, distributor engagement</li> </ul> <p><u>Milestone 3 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Develop messaging and creative content</li> </ul> <p><u>Milestone 4 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Develop Landing Environment</li> </ul> <p><u>Milestone 5 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Develop an inbound communications strategy and architecture including appropriate referral destinations and responses for anticipated areas of interest.</li> </ul> <p><u>Milestone 6 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Buy and execute media placements</li> </ul> <p><u>Milestone 7 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Media and landing environment go live in market</li> </ul>

	<p><u>Milestone 8 (2020) - Complete</u></p> <ul style="list-style-type: none"> <li>• Measure/Analyze assets, adjust to optimize campaign performance</li> </ul>
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## 21.6.2 Target Market Characterization

<p><b>Target Market Segment(s)</b></p>	<ul style="list-style-type: none"> <li>• Target Market Segments include entities in gas constrained areas, initially targeting Westchester county. Specific market actors that will be targeted include: <ul style="list-style-type: none"> <li>○ Owners of existing multifamily and commercial buildings</li> <li>○ Service providers and contractors</li> <li>○ Real estate developers</li> <li>○ Residential homeowners</li> <li>○ Low-to-moderate income building residents</li> <li>○ Small-medium sized business owners</li> </ul> </li> </ul>
<p><b>Stakeholder/Market Engagement</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA conducted baseline research in Westchester County to gauge awareness and perceptions. Phone surveys were conducted with 206 homeowners in Westchester County from April 25 through May 5, 2019.</li> <li>• Only one quarter of all survey respondents said they were aware of the Gas Moratorium prior to taking the survey.</li> <li>• When it comes to awareness of clean heating and cooling technologies, few homeowners are aware of space heating technologies powered without on-site fuel combustion. Of homeowners, 38% are aware of ground source/geothermal heat pumps, while only 31% are aware of air source heat pumps.</li> <li>• The survey also finds that based on current consumer perception, only two in 10 homeowners would be very or extremely interested in switching from their current heating and cooling equipment to technologies that incorporate cleaner energy sources, while only one in four would be very or extremely interested in making their home more energy efficient.</li> <li>• Respondents cited perceived costs as the top reason they would not be as interested in switching to clean heating and cooling technologies or making their home more energy efficient, and we can infer that lack of awareness also plays a role in low levels of interest.</li> <li>• Approximately one third of homeowners said they would be more interested if they knew rebates, incentives, and financing were available to help them switch.</li> <li>• The key takeaway from this research is that more education around the benefits and financial value of clean technologies and energy efficiency, in addition to the promotion of State and utility incentives, can help boost the awareness, interest, and installation of these products.</li> </ul>
<p><b>Relationship to Utility Programs and REV Initiatives</b></p>	<ul style="list-style-type: none"> <li>• NYSERDA will collaborate with the involved utilities on the campaign messaging, timing, scope, outcomes and related elements where possible, leveraging the strengths and resources of all involved parties including utility marketing efforts and outreach activities.</li> <li>• NYSERDA will provide overarching support that can streamline and direct customers to the options available to them across all relevant entities in NYS, including NYSERDA programs as well as those available to customers by separate gas and electric utilities.</li> <li>• Messaging and the landing environment will promote utility programs by linking to the details on utility specific websites, based on a customer's location and eligibility for specific programs.</li> </ul>

	<ul style="list-style-type: none"> <li>• NYSERDA will also collaborate with the Long Island Power Authority (LIPA) and PSEG Long Island to explore expanding the campaign to Long Island such that all customers affected by the downstate gas constraints can benefit from the program.</li> </ul>
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### 21.6.3 Fuel Neutrality

<b>Fuel Neutrality</b>	<ul style="list-style-type: none"> <li>• The consumer awareness campaign will be conducted on a fuel neutral basis to drive maximum fuel reductions in gas constrained areas. By providing information on both electric and fuel efficiency measures and clean heating and cooling, NYSERDA will maximize the impact of the campaign, generating the greatest benefits for the cost.</li> </ul>
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### 21.6.4 Performance Monitoring and Evaluation Plans

<b>Performance Monitoring &amp; Evaluation Plan</b>	<p>NYSERDA’s approach to monitoring and assessing the effectiveness of the initiative and overall market development is described below.</p> <p><b><u>Test-Measure-Adjust Strategy</u></b> On-going measurement will provide insights for campaign evaluation as well as ongoing optimization throughout the campaign.</p> <p><b>Perceptions</b></p> <ul style="list-style-type: none"> <li>• Track leading indicators tied to the campaigns overarching objectives. Consumer surveys conducted at milestone points in the campaign will allow comparison of these key indicators to pre-campaign levels of awareness, familiarity, and interest and consideration.</li> <li>• The evaluation of interest and consideration will take into account the purchase cycles for equipment replacement. These digital surveys will be delivered before the launch of each flight of the campaign and again at each flight’s completion.</li> </ul> <p><b>Actions</b></p> <ul style="list-style-type: none"> <li>• Website traffic and user behavior will provide insights into campaign performance via the landing environment. These include: Sessions, Pageviews, Average Session Duration, Unique Visitors, New vs. Returning Visitors,</li> <li>• NYSERDA will also monitor on-site Actions: Opt-in, Engaging with Gated Content, Visits to a Program Page, downloading a PDF, or Clicking a Call-to-Action Button on the Landing Page(s).</li> </ul> <p><b>Media Performance</b></p> <ul style="list-style-type: none"> <li>• Media evaluation will include traditional metrics such as impressions and reach. Data from Paid Search will include click through rates as well as insights from segment-specific paid search strategies.</li> </ul> <p><b>Program Participation and Technology Adoption</b></p> <ul style="list-style-type: none"> <li>• Options to track program participation and technology adoption over time will be coordinated with Utilities and the NYSERDA evaluation team.</li> </ul>
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### 21.6.5 Budgets

The commitment budget for all activities included in this investment plan is as follows:

Funding Commitments

----- Commitments Plan -----

Budget	Plan Total	Previously Committed	2020	2021	2022	2023	2024	2025
Incentives and Services	-	-	-	-	-	-	-	-
Implementation	-	-	-	-	-	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-
Tools, Training and Replication	2,803,610	2,803,610	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-
<b>Total</b>	<b>2,803,610</b>	<b>2,803,610</b>	-	-	-	-	-	-

An annual expenditure budget for all activities included in this investment plan is shown in Appendix B. Budgets do not include Administration, Evaluation, or Cost Recovery Fee; these elements are addressed in the Budget Accounting and Benefits chapter filing. The budget as presented in the Budget Accounting and Benefits Chapter will serve as the basis for any subsequent reallocation request. The additional level of detail presented within Appendix B is intended for informational purposes only.

### 21.6.6 Progress and Performance Metrics

Appendix C provides program Activity/Output indicators representing measurable, quantifiable direct results of activities undertaken in the initiative. Outputs are a key way of regularly tracking progress, especially in the early stages of an initiative, before broader market changes are measurable. Outcome indicators can encompass near-term through longer-term changes in market conditions expected to result from the activities/outputs of an intervention. Outcome indicators will have a baseline value and progress will be measured periodically through Market Evaluation.

## Verified Gross Savings Specification Tables

<b>Verified Gross Savings Specification Form</b>	
Date of CEF filing: See Cover Page	
CEF Chapter Name: Multi-Sector Solutions	
Initiative Name	Technical Services
Sub-Initiative Name(s)	Commercial Industrial Agriculture Multifamily Residential (covered in the Residential VGS Form)
Initiative Period	This initiative was initially offered in 2017. For a brief time between April 2019 to June 2019, this initiative was known as Aggregated Technical Services.  Prior to the CEF offering, Technical Services has been offered through NYSERDA since 1991.
Initiative Description	The benefits of energy efficiency measures are not always apparent to end-users. Technical Services seeks to show the benefits of clean energy technologies through pilot programs which can demonstrate value to users, through cost-sharing of site-specific energy efficiency studies (FlexTech), as well as establishing best practices for these actions. Commercial: Pilots, studies, and best practice guides will be done. Industrial: No pilot studies or best practice guides will be done. The industrial sector does take part in the FlexTech effort. Agriculture: No pilot studies will be done. Best practice guides will be created. The agriculture sector has its own Energy Audit program, which uses FlexTech

	<p>consultants, but program is run by NYSERDA program staff and the audits are completely free to the end user.</p> <p>Multi-Family: No pilots or best practice guides will be done. The multi-family sector does take part in the FlexTech and onsite energy manager efforts.</p>
Gross Savings Methodology	<p>Commercial and Multifamily Sector: Energy savings calculated using the formulas and factors found in the Technical Resource Manual or through other sound engineering practices. These engineering practices are industry standard calculation methodologies and implemented by contractors. These methodologies are reviewed and validated by NYSERDA.</p> <p>Industrial: Energy savings from the FlexTech effort are calculated by FlexTech consultants. The FlexTech savings reports are then reviewed by a NYSERDA project manager and reviewed for Quality Assurance and Quality Control by Program staff and a technical review contractor under contract by Program.</p> <p>Agriculture: Savings from the Ag Energy Audit effort are calculated the same way as the savings from FlexTech in the Industrial sector.</p>
Realization Rate (RR)	No RR has been determined for this initiative within the preceding five-year time frame.
Planned VGS Approach	<p>Commercial and Industrial Sectors: Technical Services will undergo Gross Savings Analysis for program period 2017-2019. Details related to the Gross Savings Analysis methodology will be submitted in an EM&amp;V Plan in 2021. The estimated completion of this report is 2022. An independent evaluation contractor will be competitively procured by NYSERDA to perform these analyses.</p> <p>Periodic surveys conducted by independent Evaluation contractors is planned. This assessment will include but is not limited to a Measure Adoption Rate (MAR), and other consumer decision making research objectives. Where possible, these impact assessments will be designed to leverage market evaluation activities. In addition, evaluation measurement &amp; verification will be conducted for a sample of participating projects, according to the International Performance Measurement &amp; Verification Protocol (IPMVP) method(s) most appropriate, such as field verification.</p> <p>Agriculture: A Market Adoption Rate study for the Ag Energy Audit effort will be performed in Q3 2020. No Gross Savings Analysis is currently planned.</p> <p>Multi-Family: No Gross Savings Analysis is currently planned for this sector.</p>
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: <i>see cover page</i>	
CEF Chapter Name	Multi-Sector Solutions
Initiative Name	Market Challenges
Sub-initiatives	Commercial and Industrial (C&I) Carbon Challenge (2018) Empire Building Challenge (2020)
Initiative Description	Large energy users in New York State are being asked by their investors, customers and employees to take more action to limit their carbon footprint. However, barriers such as low market prices of natural gas, perceived technology risk and policy uncertainty have stifled capital investment in energy efficiency projects. The Market Challenges initiative seeks to fund pilot projects that achieve one of two criteria: provide a streamlined and cost-effective manner for large energy consumers to reduce greenhouse gas emissions; or

	<p>address a difficult-to-decarbonize energy use through a project that has the potential for replicability and scale.</p> <p>The Gross and Planned Verified Gross Savings Methodologies is described for each sub-initiative below.</p>
Gross Savings Methodology	<p>For the following sub-initiatives, where NYSERDA is encouraging market adoption of energy efficient technologies or practices, energy savings will be calculated using the formulas and factors found in the Technical Resource Manual (TRM).</p> <p>Both initiatives will undergo program M&amp;V at the site level. Methodologies specific to each sub-initiative are described below.</p> <p><b>C&amp;I Carbon Challenge</b> – the energy savings of this sub-initiative are based on the TRM and deemed values. NYSERDA employs independent third-party technical review for all projects implemented through this sub-initiative.</p> <p><b>Empire Building Challenge</b> – the energy savings of this sub-initiative are based on the TRM and deemed values. NYSERDA employs independent third-party technical review for all projects implemented through this sub-initiative.</p>
Realization Rate (RR)	No realization rates have been determined for these sub-initiatives within the preceding five-year time frame.
Planned Verified Gross Savings Approach	<p>The sub-initiatives listed in this Investment Plan are planned to undergo Gross Savings Analysis. An Independent evaluation contractor will be procured by NYSERDA to perform these analyses.</p> <p>For these sub-initiatives, where direct measure installation occurs, evaluation measurement &amp; verification will be conducted for a sample of participating projects, according to the International Performance Measurement &amp; Verification Protocol (IPMVP) method(s) most appropriate.</p> <p>Verified Gross Savings approaches specific to these sub-initiatives are described below.</p> <p><b>C&amp;I Carbon Challenge</b> – Impact evaluation activity is planned to include third-party desk reviews of all M&amp;V plans and analyses developed through the initiative. This review will assess the methodologies used and any variances in savings calculations. A program-level savings adjustment factor may be applied if appropriate.</p> <p><b>Empire Building Challenge</b> – Impact evaluation activity is planned to include third-party desk reviews of all M&amp;V plans and analyses developed through the initiative. This review will assess the methodologies used and any variances in savings calculations. A program-level savings adjustment factor may be applied if appropriate.</p>
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification Form</b>	
Date of CEF filing: See cover page	
CEF Chapter Name: Multi-Sector Solutions	
Initiative Name	Clean Energy Siting & Soft Cost Reduction
Sub-Initiative Name(s)	N/A
Initiative Period	This initiative was initially launched in 2017.
Initiative Description	New York State has a goal of obtaining 70% of its electricity from renewable sources by the year 2030. This initiative seeks to reduce market barriers inhibiting the deployment of clean energy technologies. NYSERDA provides

	technical and financial assistance to reduce the soft costs associated with implementing these renewable energy projects across the state. The primary focus of the initiative is on helping local governments understand and prepare for distributed solar and large scale renewable projects, including energy storage.
Gross Savings Methodology	Energy savings are not calculated for the Clean Energy Siting and Soft Cost Reduction initiative.
Realization Rate (RR)	No RR will be determined for this initiative as there are no energy savings.
Planned VGS Approach	Gross savings analysis for distributed solar will be conducted for the NY-SUN portfolio as a whole. NYSERDA will develop an approach to identify projects undertaken through this initiative and represent them in the evaluation.  Gross savings analysis is not planned for large scale renewable wind technology.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: See cover page	
CEF Chapter Name: Multi-Sector Solutions	
Initiative Name	Pay for Performance
Initiative Period	The Pay for Performance initiative was initially offered in August 2018.
Initiative Description	Pay for Performance is designed to promote a performance-based structure, where the risk of underperformance is borne by an energy service provider, and the end use customer receives guaranteed, lower cost of energy with little or no money down.
Gross Savings Methodology	The gross savings methodology centers around non-routine adjustments (NRAs) and associated non-routine events (NREs).NRAs are adjustments for changes in savings that cannot be predicted, such as weather or occupancy, typically referred to as NREs. NREs occurring on program pilot projects are flagged by the initiative's Advanced Measurement and Verification (AMV) Solution Provider (ReCurve). These flagged NREs and potential NRAs resulting from these events are forwarded to an impact contractor (ERS) competitively procured by NYSERDA. ERS receives NRE records from Recurve, reviews the basis of each of them with a combination of automated and manual procedures, and reports monthly on accepted and rejected NREs. ERS also checks for longer-term trends in NRE claims to support refinement of the pilot over time.
Realization Rate (RR)	No RR has been determined for this program within the preceding five-year time frame
Planned VGS Approach	Pay for Performance will undergo review of NREs and adjustments for program pilot period 2020-2023. Details related to the review of program pilot non-routine events and adjustments was submitted in an EM&V Plan in Q3 2019. The estimated completion of this review is March 2022. Independent evaluator, ERS, will perform this review.  In addition, NYSERDA will competitively procure an independent evaluator to perform the Gross Savings Analysis in Q3 2020. It is anticipated this evaluation may include an experimental sampling design, where applicable, to control for effects influenced by the pilots.

Exemption from EAM Status	N/A
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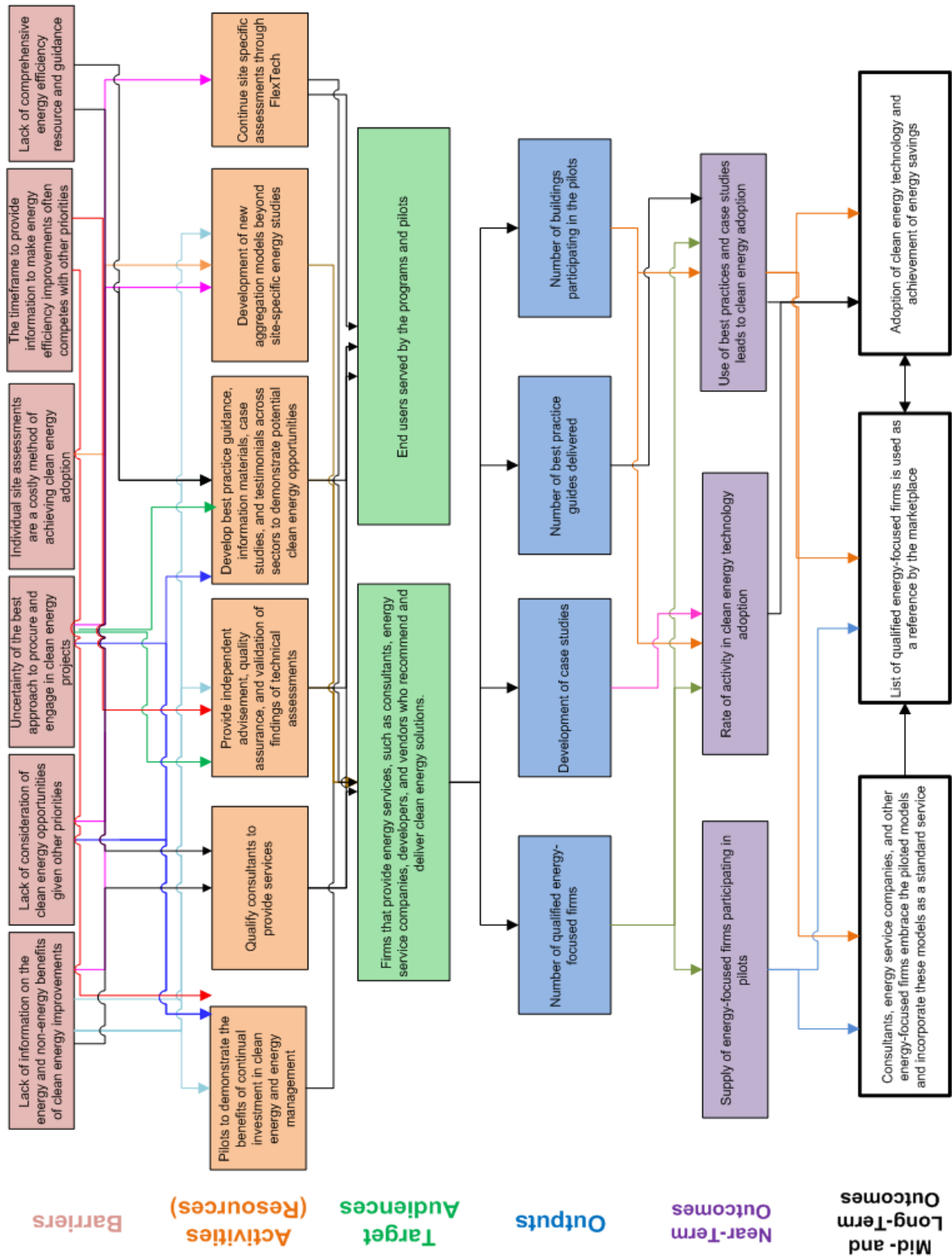
<b>Verified Gross Savings Specification</b>	
Date of CEF filing: See cover page	
CEF Chapter Name: Multi-Sector Solutions Chapter	
Initiative Name	Information Products and Brokering
Initiative Period	This initiative was initially offered in March 2019.
Initiative Description	The Information Products and Brokering initiative will focus on developing information tools and resources to accelerate customer adoption of energy efficiency and clean energy by reducing project soft costs, including through developing customer targeting tools, value proposition calculators, sponsoring events to draw web-based tool development and analytics firms into the clean energy space, and acquiring, aggregating, and sharing data resources.
Gross Savings Methodology	All savings for the Information Products and Brokering initiative are indirect and will be evaluated through market evaluation.
Realization Rate (RR)	N/A
Planned VGS Approach	All savings for the Information Products and Brokering initiative are indirect and will be evaluated through market evaluation.
Exemption from EAM Status	N/A

<b>Verified Gross Savings Specification</b>	
Date of CEF filing: <i>see cover page</i>	
CEF Chapter Name	Multi-Sector Solutions
Initiative Name	Consumer Awareness
Initiative Period	2020
Initiative Description	NYSERDA will support activities related to the critical market need to build consumer demand and market confidence and reduce customer acquisition costs related to heat pump technologies.
Gross Savings Methodology	N/A: all savings for the initiative are indirect and will be evaluated through market evaluation.
Realization Rate (RR)	N/A
Planned VGS Approach	N/A: all savings for the initiative are indirect and will be evaluated through market evaluation.
Exemption from EAM Status	N/A

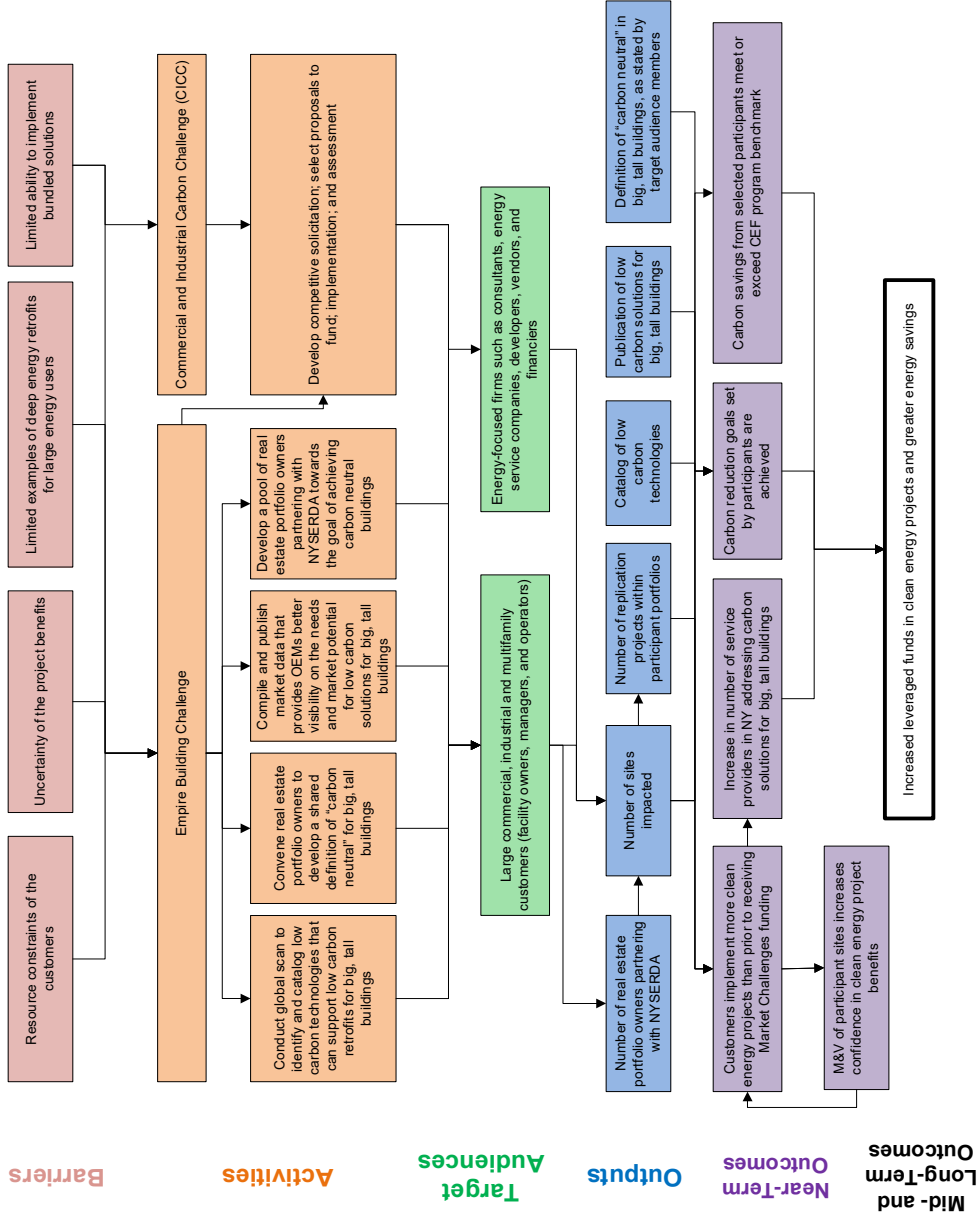


# Appendix A – Logic Models

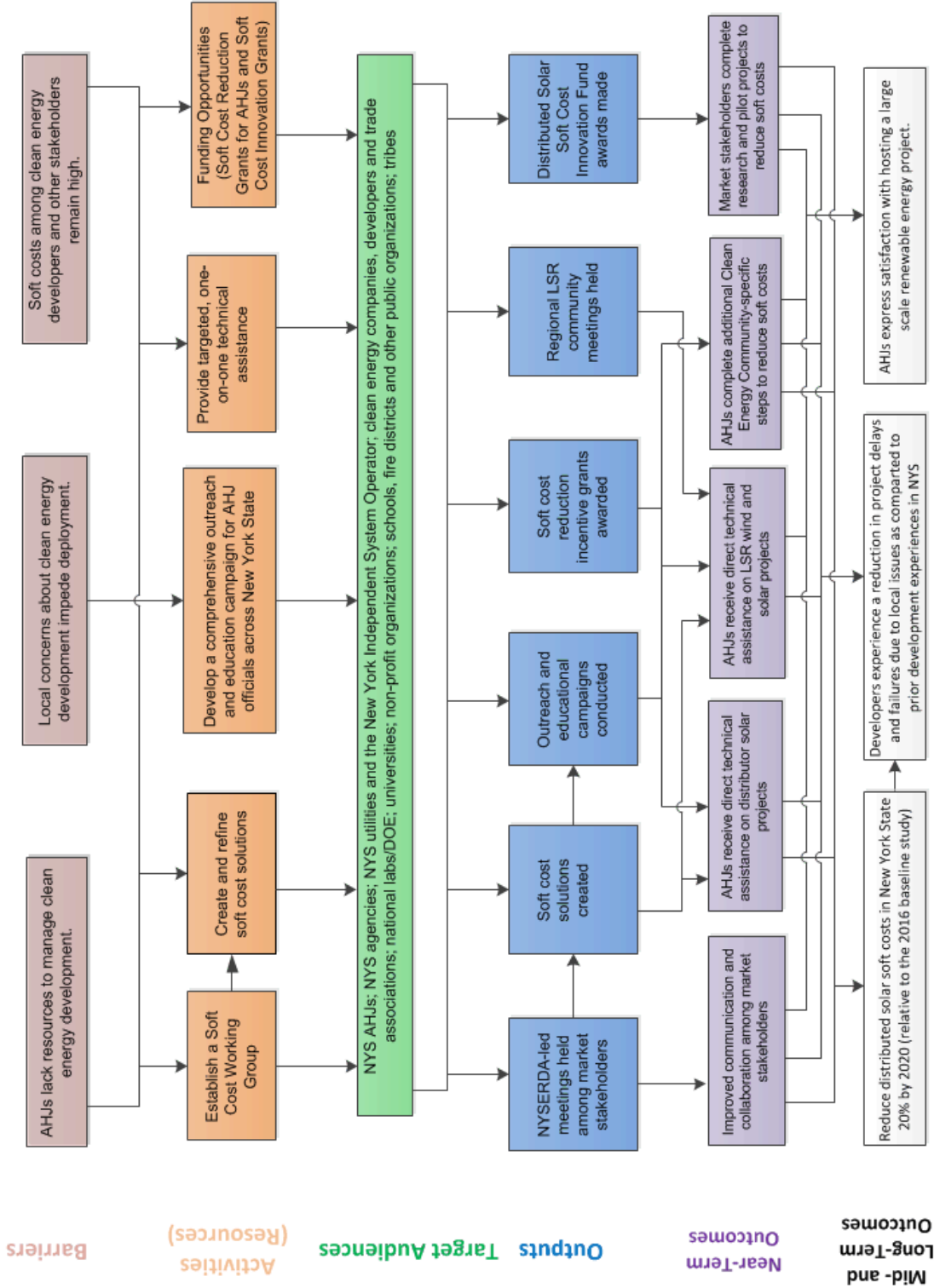
## LOGIC MODEL: Technical Services



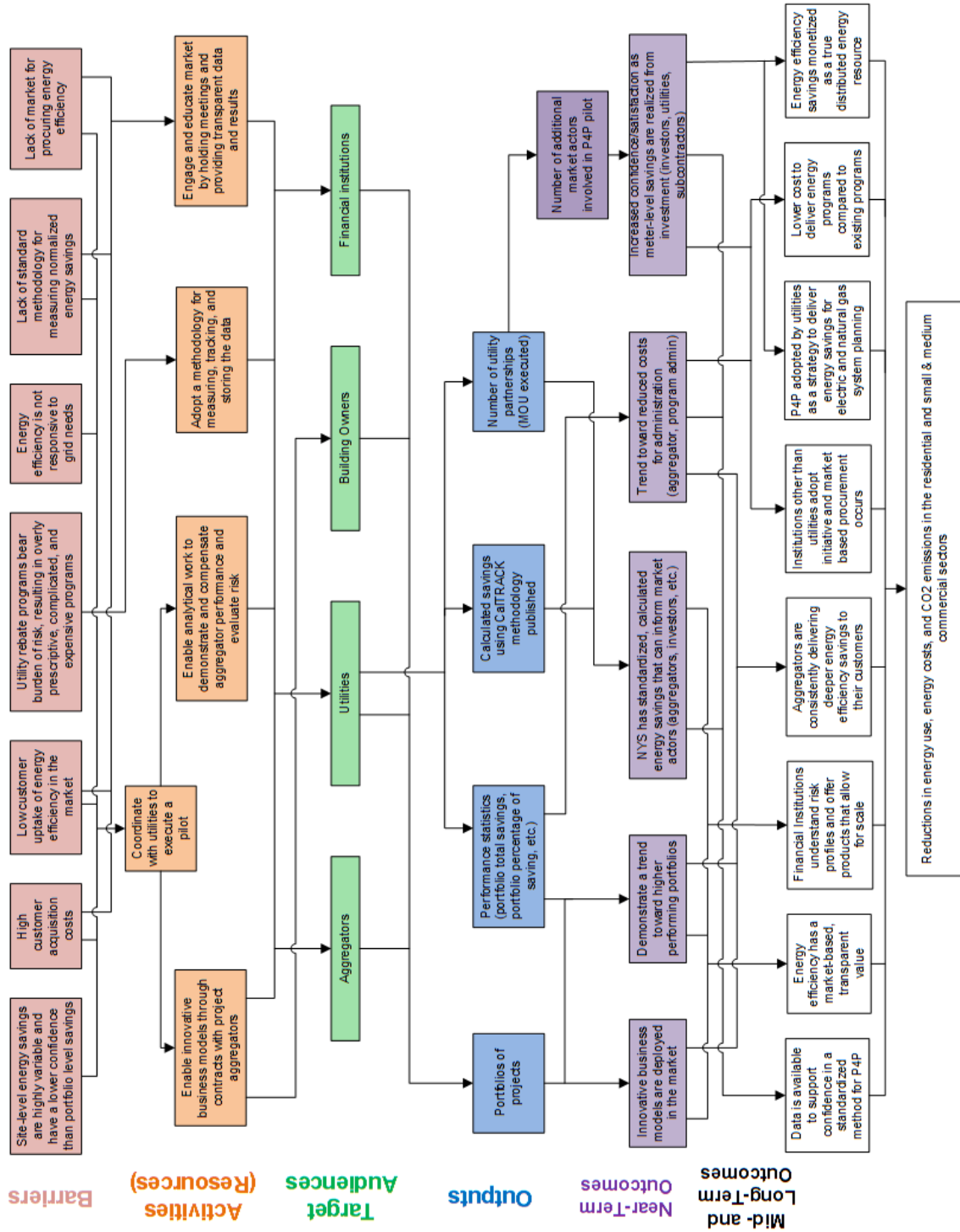
# LOGIC MODEL: Market Challenges



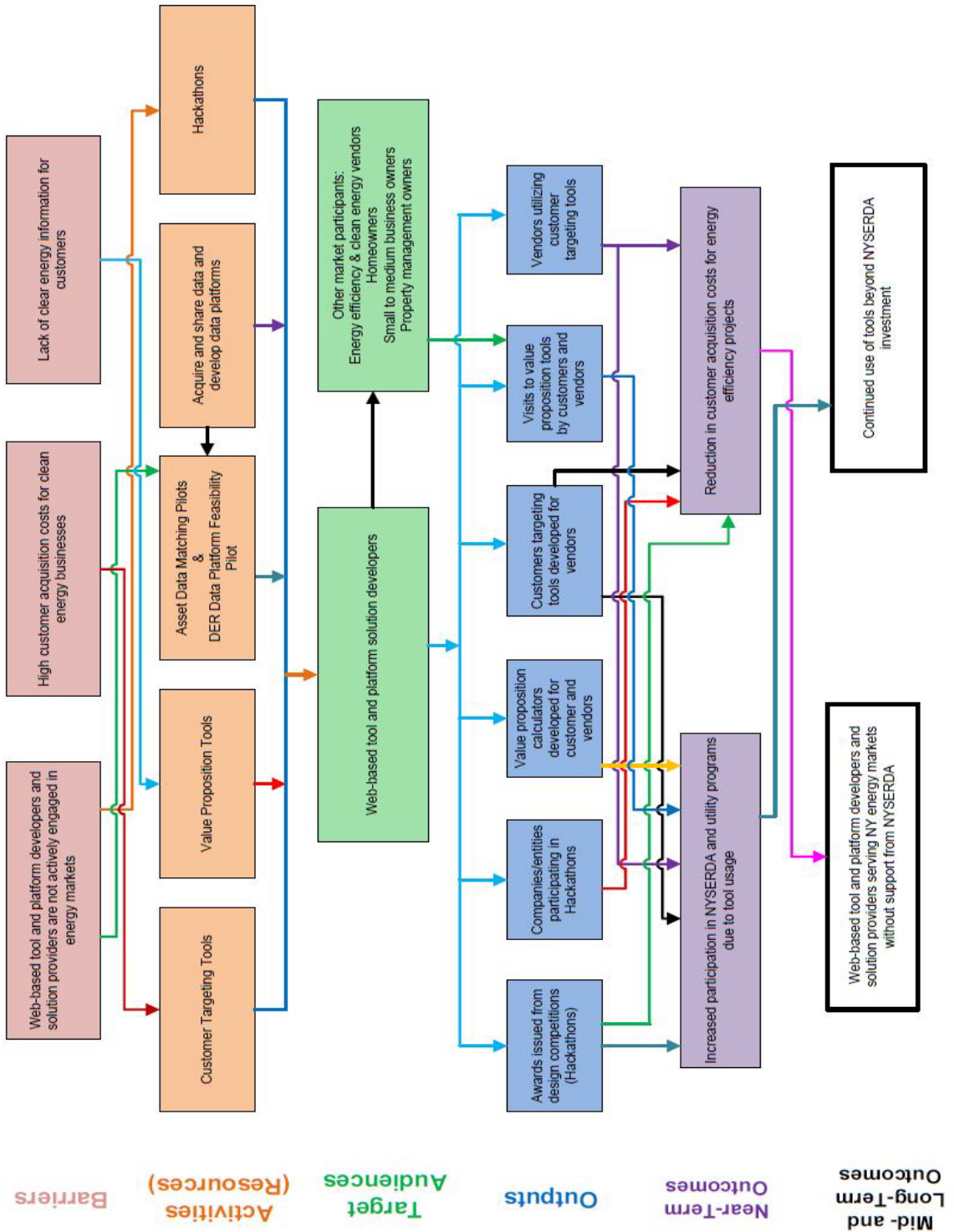
# LOGIC MODEL: Clean Energy Siting & Soft Cost Reduction



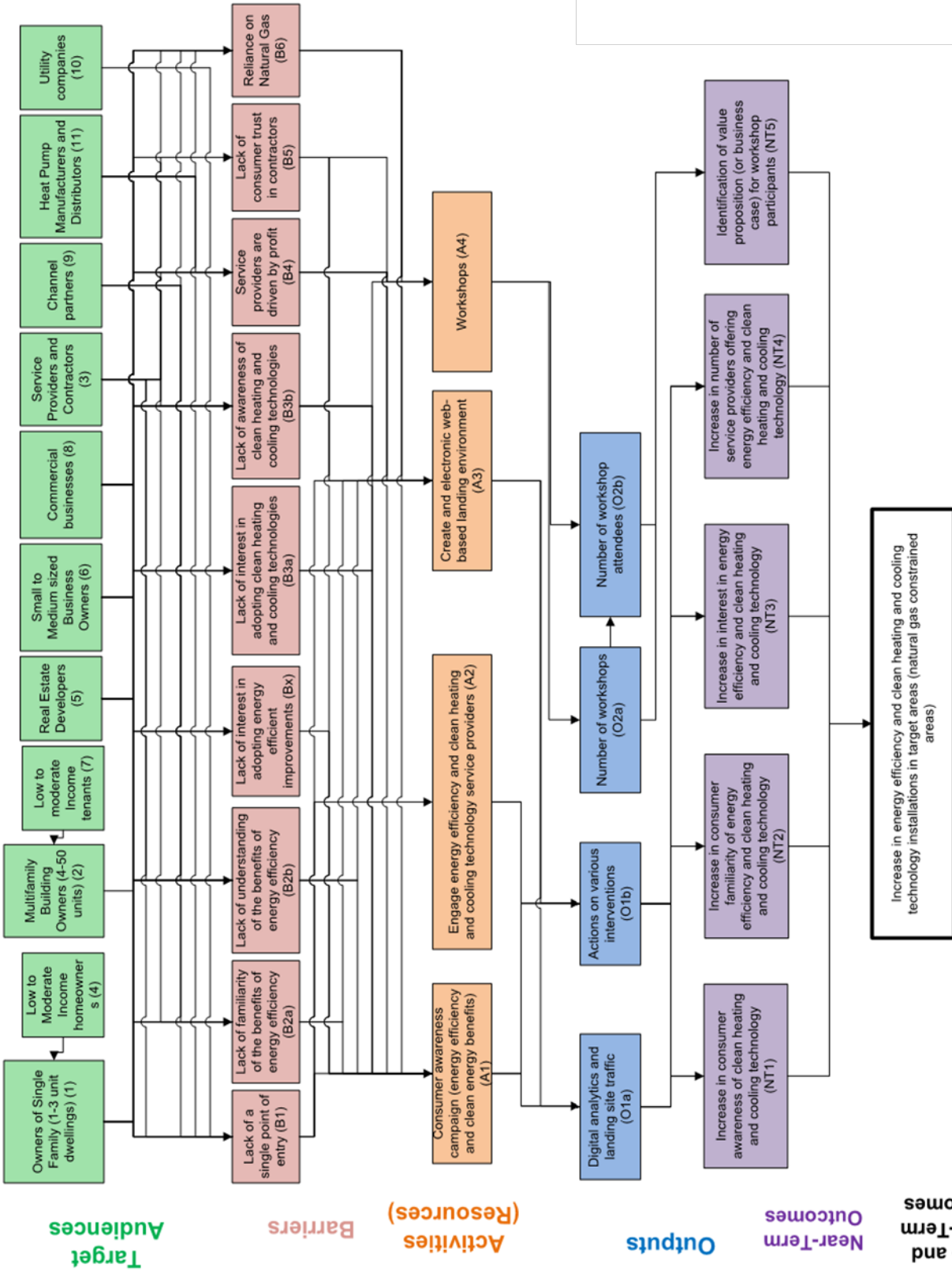
# LOGIC MODEL: Pay for Performance Pilot



# LOGIC MODEL: Information Products & Brokering



# Logic Model: Consumer Awareness



# Appendix B | Initiative Budget and Benefits Summary

## Technical Services

		Benefits Acquisition Plan														
Direct Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	393,034	-	-	988	638	45,726	35,003	45,008	46,334	57,855	50,236	44,797	33,369	22,256	8,285	2,539
Energy Efficiency MWh Lifetime	6,683,994	-	-	16,796	10,841	779,757	595,052	765,136	787,681	983,531	854,007	761,551	567,272	378,359	140,844	43,168
Energy Efficiency MMBtu Annual	4,034,372	-	-	300	7,036	313,865	262,510	386,898	442,040	559,112	527,774	560,561	420,844	281,354	196,456	75,623
Energy Efficiency MMBtu Lifetime	68,564,238	-	-	5,095	119,605	5,313,615	4,462,662	6,577,264	7,514,684	9,504,901	8,972,151	9,529,544	7,154,352	4,783,024	3,339,744	1,285,597
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	1,811	-	-	13	556	1,243	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	30,792	-	-	218	9,450	21,124	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	4	-	-	-	-	0	0	1	1	1	1	0	0	0	0	-
CO2e Emission Reduction (metric tons) Annual	417,261	-	-	522	979	39,912	31,763	43,583	47,300	59,454	53,975	53,110	39,741	26,542	14,935	5,447
CO2e Emission Reduction (metric tons) Lifetime	7,092,477	-	-	8,874	16,636	677,548	539,972	740,904	804,092	1,010,721	917,568	902,863	675,591	451,212	253,889	92,606
Participant Bill Savings Annual	78,818,134	-	-	155,055	262,104	8,569,484	6,109,719	8,286,678	8,879,212	11,210,749	10,039,943	9,746,152	7,232,087	4,925,055	2,503,121	898,774
Participant Bill Savings Lifetime	1,339,880,746	-	-	2,635,943	4,455,759	145,653,710	103,865,219	140,873,526	150,946,611	190,582,739	170,679,038	165,684,576	122,945,481	83,725,929	42,553,062	15,279,153
Leveraged Funds	221,346,227	-	-	529,939	2,530,262	10,074,734	18,315,759	33,874,860	28,135,430	29,538,992	29,447,440	24,796,122	19,264,434	15,844,242	8,994,013	-

Indirect Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	240,992	-	-	-	-	-	3,084	14,268	21,183	35,426	36,509	38,314	36,509	34,704	3,507	17,487
Energy Efficiency MMBtu Annual	3,115,422	-	-	-	-	-	22,957	173,263	250,706	422,925	468,654	544,869	468,654	392,439	147,630	223,326
Renewable Energy MWh Annual	5,304	-	-	-	-	-	81	322	484	806	806	806	806	806	-	387
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	409,496	-	-	522	979	39,912	31,763	43,194	46,756	58,522	52,810	51,557	38,576	25,765	14,236	4,904
CO2e Emission Reduction (metric tons) Lifetime	6,960,475	-	-	8,874	16,636	677,548	539,972	734,304	794,852	994,881	897,768	876,463	655,790	438,012	242,009	83,366

Energy Usage	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Energy Usage MWh Annual	(1,874)	-	-	-	-	(1,874)	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	(31,862)	-	-	-	-	(31,862)	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Participants	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Buildings	4,244	-	-	-	31	152	298	298	309	305	260	208	131	131	-	2,122
Farms	1,430	-	32	123	85	90	61	110	110	95	9	-	-	-	-	715
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>5,674</b>	<b>-</b>	<b>32</b>	<b>123</b>	<b>116</b>	<b>242</b>	<b>359</b>	<b>408</b>	<b>419</b>	<b>400</b>	<b>269</b>	<b>208</b>	<b>131</b>	<b>131</b>	<b>-</b>	<b>2,837</b>

		Budget Expenditures Plan														
Budget	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	78,895,859	-	-	136,574	1,404,282	3,433,739	6,062,730	10,886,379	10,339,957	11,017,952	11,258,217	9,250,782	6,875,866	4,780,420	3,448,962	-
Implementation	12,700,583	-	807	32,466	536,051	833,604	1,400,863	1,512,854	1,591,860	1,689,595	1,726,169	1,351,400	1,150,603	439,594	434,716	-
Research and Technology Studies	1,350,000	-	-	-	-	-	5,000	85,000	210,000	335,000	299,000	221,000	195,000	-	-	-
Tools, Training and Replication	4,400,742	-	-	-	-	160,019	425,845	755,253	1,024,395	895,820	712,437	290,583	136,390	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>97,347,184</b>	<b>-</b>	<b>807</b>	<b>169,040</b>	<b>1,940,333</b>	<b>4,427,361</b>	<b>7,894,437</b>	<b>13,239,487</b>	<b>13,166,212</b>	<b>13,938,367</b>	<b>13,995,822</b>	<b>11,113,765</b>	<b>8,357,860</b>	<b>5,220,013</b>	<b>3,883,678</b>	<b>-</b>

- Table Notes:**
- \* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.
  - a. Impacts are expressed on an acquired-year basis, and are incremental additions in each year. Assumes a 17-year measure life. Customer Bill Savings are calculated as direct energy bill savings realized by customers participating in NYSERDA's programs.
  - b. Participants are defined as end-users, those who receive information on clean energy projects. This includes FlexTech, the pilots listed and agriculture audits.

# Appendix B | Initiative Budget and Benefits Summary

## Clean Energy Siting and Soft Cost Reduction

		Benefits Acquisition Plan														
	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Direct Benefit</b>																
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Indirect Benefit</b>																
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Energy Usage</b>																
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Participants</b>																
Authorities having Jurisdiction	429	-	-	133	195	26	15	15	15	15	15	15	-	-	-	-
Working Group Participants	113	-	113	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>542</b>	-	<b>113</b>	<b>133</b>	<b>195</b>	<b>26</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	-	-	-	-	-
<b>Budget Expenditures Plan</b>																
	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	1,600,000	-	-	-	-	-	38,023	285,678	533,333	495,310	247,655	-	-	-	-	-
Implementation	386,075	-	-	50,459	69,451	5,033	87,044	87,044	87,044	-	-	-	-	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	6,808,925	-	-	63,960	199,087	346,229	1,137,439	1,601,995	2,066,550	929,110	464,555	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>8,795,000</b>	-	-	<b>114,419</b>	<b>268,538</b>	<b>351,262</b>	<b>1,262,507</b>	<b>1,974,717</b>	<b>2,686,927</b>	<b>1,424,420</b>	<b>712,210</b>	-	-	-	-	-

**Table Notes:**

\* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.

a. Participants include AHJ technical assistance recipients, AHJ grant recipients, Innovation grant recipients, and working group members (including solar developer, utility, non-profit and national expert representatives).



# Appendix B | Initiative Budget and Benefits Summary

## Consumer Awareness

		Benefits Acquisition Plan														
Direct Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Usage	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participants	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
		Budget Expenditures Plan														
Budget	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Implementation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	2,803,610	-	-	-	12,733	1,195,877	1,015,000	580,001	-	-	-	-	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>2,803,610</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12,733</b>	<b>1,195,877</b>	<b>1,015,000</b>	<b>580,001</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Table Notes:**  
 \* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.

# Appendix B | Initiative Budget and Benefits Summary

## Information Products and Brokering

		Benefits Acquisition Plan														
Direct Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participant Bill Savings Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leveraged Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	24,030	-	-	-	-	-	-	-	2,841	2,841	2,927	3,084	3,084	3,084	3,084	3,084
Energy Efficiency MMBtu Annual	1,670,903	-	-	-	-	-	-	-	198,444	198,444	204,457	213,912	213,912	213,912	213,912	213,912
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	125,095	-	-	-	-	-	-	-	14,850	14,850	15,301	16,019	16,019	16,019	16,019	16,019
CO2e Emission Reduction (metric tons) Lifetime	2,501,902	-	-	-	-	-	-	-	297,010	297,010	306,011	320,374	320,374	320,374	320,374	320,374
Energy Usage	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Participants	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Business Owner and Homeowners Utilizing Value Proposition	6,000	-	-	-	-	-	-	1,000	2,000	3,000	-	-	-	-	-	-
Participants in Hackathons	425	-	-	-	-	50	75	100	200	-	-	-	-	-	-	-
Vendors Utilizing Customer Targeting Tools	250	-	-	-	-	100	50	100	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>6,675</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>150</b>	<b>125</b>	<b>1,200</b>	<b>2,200</b>	<b>3,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
		Budget Expenditures Plan														
Budget	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	400,000	-	-	-	50,000	50,000	-	50,000	75,000	125,000	50,000	-	-	-	-	-
Implementation	556,042	-	-	-	2,429	52,097	125,000	125,000	100,000	100,000	50,000	1,516	-	-	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	7,543,958	-	-	-	280,484	238,575	250,000	1,250,000	1,250,000	1,750,000	2,000,000	524,900	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>8,500,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>332,912</b>	<b>340,671</b>	<b>375,000</b>	<b>1,425,000</b>	<b>1,425,000</b>	<b>1,975,000</b>	<b>2,100,000</b>	<b>526,416</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Table Notes:**  
 \* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.

# Appendix B | Initiative Budget and Benefits Summary

## Market Challenges

		Benefits Acquisition Plan														
Direct Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	240,332	-	-	-	-	-	-	48,652	50,670	68,414	36,662	23,083	12,850	-	-	-
Energy Efficiency MWh Lifetime	3,998,894	-	-	-	-	-	-	729,785	1,021,366	1,158,816	549,929	346,244	192,754	-	-	-
Energy Efficiency MMBtu Annual	3,294,693	-	-	-	-	-	-	920,601	554,974	799,476	514,939	324,213	180,490	-	-	-
Energy Efficiency MMBtu Lifetime	50,164,390	-	-	-	-	-	-	13,809,012	8,820,616	12,240,142	7,724,080	4,863,195	2,707,345	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	7,766	-	-	-	-	-	-	3,188	1,491	1,000	1,267	820	-	-	-	-
Renewable Energy MWh Lifetime	116,491	-	-	-	-	-	-	47,820	22,363	15,007	19,009	12,293	-	-	-	-
Renewable Energy MW	7	-	-	-	-	-	-	3	1	1	1	1	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	309,230	-	-	-	-	-	-	76,997	57,430	79,851	48,059	30,269	16,623	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	4,877,138	-	-	-	-	-	-	1,154,961	1,020,103	1,277,804	720,886	454,043	249,342	-	-	-
Participant Bill Savings Annual	52,143,489	-	-	-	-	-	-	12,347,394	10,946,334	13,577,983	7,777,840	4,903,672	2,590,266	-	-	-
Participant Bill Savings Lifetime	840,534,386	-	-	-	-	-	-	185,210,914	203,101,345	223,145,458	116,667,605	73,555,073	38,853,990	-	-	-
Leveraged Funds	314,607,891	-	-	-	-	-	-	71,479,485	76,151,850	95,727,847	36,545,144	24,123,787	10,579,778	-	-	-

Indirect Benefit	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Energy Efficiency MWh Annual	236,342	-	-	-	-	-	-	-	25,997	25,997	26,785	31,512	31,512	31,512	31,512	31,512
Energy Efficiency MMBtu Annual	446,400	-	-	-	-	-	-	-	49,104	49,104	50,592	59,520	59,520	59,520	59,520	59,520
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	143,210	-	-	-	-	-	-	-	15,753	15,753	16,230	19,095	19,095	19,095	19,095	19,095
CO2e Emission Reduction (metric tons) Lifetime	3,580,247	-	-	-	-	-	-	-	393,824	393,824	405,758	477,368	477,368	477,368	477,368	477,368

Energy Usage	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Energy Usage MWh Annual	(1,864)	-	-	-	-	-	-	(1,864)	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	(27,957)	-	-	-	-	-	-	(27,957)	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Participants	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Participants	33	-	-	-	-	-	14	7	7	5	-	-	-	-	-	-
Pilots	8	-	-	-	-	-	-	1	4	3	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>41</b>	-	-	-	-	-	<b>14</b>	<b>8</b>	<b>11</b>	<b>8</b>	-	-	-	-	-	-

		Budget Expenditures Plan														
Budget	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	96,224,753	-	-	-	2,002,833	2,490,690	3,611,164	12,438,164	26,472,007	16,475,292	17,665,389	10,053,147	3,070,310	1,945,759	-	-
Implementation	6,747,897	-	-	60,150	98,247	342,812	243,637	624,718	1,093,356	1,249,436	1,149,493	786,667	599,661	499,718	-	-
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	2,250,000	-	-	-	-	44,216	68,750	250,000	787,500	500,000	381,250	218,285	-	-	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>105,222,650</b>	-	-	<b>60,150</b>	<b>2,101,080</b>	<b>2,877,717</b>	<b>3,923,551</b>	<b>13,312,882</b>	<b>28,352,862</b>	<b>18,224,728</b>	<b>19,196,132</b>	<b>11,058,098</b>	<b>3,669,972</b>	<b>2,445,477</b>	-	-

**Table Notes:**  
 \* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.  
 a. Participants are defined as proposals contracted and the number of participants illustrated is the most conservative value. Actual participants may be greater based on number of awards made.

# Appendix B | Initiative Budget and Benefits Summary

## Pay for Performance

		Benefits Acquisition Plan														
	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Direct Benefit</b>																
Energy Efficiency MWh Annual	124,832	-	-	-	-	-	225	674	674	22,716	674	32,337	67,532	-	-	-
Energy Efficiency MWh Lifetime	1,638,542	-	-	-	-	-	4,045	12,134	12,134	298,114	12,134	422,067	877,916	-	-	-
Energy Efficiency MMBtu Annual	202,512	-	-	-	-	-	10,071	30,214	30,214	69,621	30,214	20,527	11,650	-	-	-
Energy Efficiency MMBtu Lifetime	3,337,649	-	-	-	-	-	181,285	543,856	543,856	1,030,959	543,856	342,388	151,450	-	-	-
Energy Efficiency MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	74,390	-	-	-	-	-	731	2,194	2,194	15,275	2,194	17,395	34,406	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	1,018,261	-	-	-	-	-	13,164	39,492	39,492	207,715	39,492	231,622	447,284	-	-	-
Participant Bill Savings Annual	19,272,020	-	-	-	-	-	196,303	588,908	588,908	3,682,558	588,908	4,580,372	9,046,064	-	-	-
Participant Bill Savings Lifetime	264,277,443	-	-	-	-	-	3,533,446	10,600,339	10,600,339	50,327,040	10,600,339	61,017,109	117,598,832	-	-	-
Leveraged Funds	117,010,000	-	-	-	-	-	3,675,000	11,025,000	11,025,000	33,617,570	11,025,000	26,071,458	20,570,972	-	-	-
<b>Indirect Benefit</b>																
Energy Efficiency MWh Annual	5,394	-	-	-	-	-	-	-	34	1,139	67	-	4,155	-	-	-
Energy Efficiency MMBtu Annual	7,940	-	-	-	-	-	-	-	1,645	1,817	3,290	-	1,188	-	-	-
Renewable Energy MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable Energy MW Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2e Emission Reduction (metric tons) Annual	3,175	-	-	-	-	-	-	-	118	680	236	-	2,142	-	-	-
CO2e Emission Reduction (metric tons) Lifetime	43,637	-	-	-	-	-	-	-	2,121	9,427	4,243	-	27,845	-	-	-
<b>Energy Usage</b>																
Direct Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MWh Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Annual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indirect Energy Usage MMBtu Lifetime	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Participants</b>																
Participants	12,584	-	-	-	-	-	500	1,500	1,500	3,380	1,500	2,472	1,732	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>12,584</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>500</b>	<b>1,500</b>	<b>1,500</b>	<b>3,380</b>	<b>1,500</b>	<b>2,472</b>	<b>1,732</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Budget Expenditures Plan</b>																
	Plan Total	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Incentives and Services	48,260,900	-	-	-	-	-	2,300,000	3,526,600	4,881,980	8,692,280	7,590,840	7,590,840	6,750,840	5,963,760	963,760	-
Implementation	4,245,805	-	-	51,661	467,922	451,134	693,271	440,000	425,000	446,265	421,349	296,265	296,265	206,674	50,000	-
Research and Technology Studies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tools, Training and Replication	3,250,004	-	-	-	201,652	318,884	349,468	408,000	408,000	408,000	408,000	348,000	200,000	200,000	-	-
Business Support	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>55,756,709</b>	<b>-</b>	<b>-</b>	<b>51,661</b>	<b>669,574</b>	<b>770,018</b>	<b>3,342,739</b>	<b>4,374,600</b>	<b>5,714,980</b>	<b>9,546,545</b>	<b>8,420,189</b>	<b>8,235,105</b>	<b>7,247,105</b>	<b>6,370,433</b>	<b>1,013,760</b>	<b>-</b>

**Table Notes:**

\* With the May 2021 IPPR filing of all investment plans, each Appendix B table that accompanies an investment plan was transitioned from yearly commitment-based budget and benefit plans to plans that forecast expenditures and acquired benefits.

## Appendix C | Initiative Outputs and Outcomes Summary

### Clean Energy Siting and Soft Cost Reduction

	Indicators	Baseline (Before/Current)	2021 (cumulative)
			Target
Outputs	Number of NYSERDA-led meetings on soft costs with market stakeholders	0	12
	Number of soft cost solutions created	3	12
	Number of outreach and education campaigns	1	3
	Number of soft cost reduction incentive grants awarded	0	50
	Number of regional LSR community meetings	0	50
	Number of Distributed Solar Soft Cost Innovation awards made	0	5
Outcomes	Percentage of working group members reporting improved communication and collaboration among market stakeholders, based on a pre- and post- intervention survey	N/A	50%
	Number of AHJs receiving up to 100 hours of direct technical assistance on distributed solar projects and battery energy storage projects	0	80
	Number of AHJs receiving direct technical assistance on LSR wind and solar projects	0	20
	Number of AHJs completing additional Clean Energy Community-specified steps to reduce soft costs	0	50
	Number of research projects and pilot projects completed	0	5
	Reduce distributed solar soft costs in New York State 20% by 2020	2016 Baseline Soft Costs:40 Residential: Con Ed: \$2.46/W Long Island: \$2.00/W Rest of State (ROS): \$2.18/W Commercial Roof-Mount: Con Ed: \$0.97/W Long Island: \$0.42/W ROS: \$1.66/W Commercial Ground-Mount: ROS Fixed: \$1.01/W ROS Tracking: \$1.03/W	20% reduction in average distributed solar soft costs relative to baseline data
	Percentage of developers that experience a reduction in project delays and failures due to local issues as compared to prior development experiences in NYS	N/A	80%
Percentage of AHJs expressing satisfaction with hosting an LSR energy project, based on a pre- and post-intervention survey	N/A	80%	

#### Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

b. Manson, Cynthia. "Solar Balance-Of-System Costs Baseline Cost Study." Prepared for NYSERDA by Industrial Economics, Incorporated (IEc). May 2017.

## Appendix C | Initiative Outputs and Outcomes Summary

### Consumer Awareness

	Indicators	Baseline (Before/Current)	2022 (cumulative)
			Target
Outputs	Increase in consumer awareness of clean heating and cooling technology	ASHP 31% GSHP 38%	80%
	Increase in consumer familiarity of energy efficiency	tbd	tbd after baseline established
	Increase in consumer familiarity of clean heating and cooling technology	extremely/very 22.3% not very/not at all 36.3%	extremely/very 44.6% not very/not at all 20.0%
	Increase in interest in making homes energy efficient	extremely/very 24.3% not very/not at all 38.3%	extremely/very 46.6% not very/not at all 23.0%
	Increase in interest in adopting clean heating and cooling technology	extremely/very 20%	extremely/very 40%
	Maintain energy efficiency service provider base in Westchester County	25	25
	Increase in number of service providers offering ground-source heat pump technology in Westchester County	45	59
	Increase in number of service providers offering air-source heat pump technology in Westchester County	29	38

#### Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

## Appendix C | Initiative Outputs and Outcomes Summary

### Information Products and Brokering

	Indicators	Baseline (Before/Current)	2021 (cumulative)	2022 (cumulative)
			Target	Target
Outputs	Number of awards issued from hackathons	0	6	9
	Number of companies/entities participating in hackathons	0	350	500
	Number of value proposition calculators developed for customers and vendors	0	2	3
	Number of customer targeting tools developed for vendors	0	2	3
	Number of visits to web-based tools by customers and vendors leading to a value proposition being generated	0	20000	60000
	Number of vendors utilizing customer targeting tools	0	200	300
Outcomes	Percent reduction in customer acquisition costs for energy efficiency projects due to use of targeting tools and value proposition calculators	0	20%	30%
	Web-based tool and platform developers and solutions providers (companies/firms) serving NY energy markets without support from NYSERDA	0	12	20

#### Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

**Appendix C | Initiative Outputs and Outcomes Summary**

**Market Challenges**

	Indicators	Baseline (Before/Current)	2020 (cumulative)	2021 (cumulative)	2022 (cumulative)	2023 (cumulative)	2024 (cumulative)	2025 (cumulative)
			Target	Target	Target	Target	Target	Target
Outputs	Number of sites impacted	0	2	3	6			
	Solution providers serving big, tall buildings in the NY market	TBD		10	20	50		
	Number of portfolio owners with a public commitment to achieving carbon neutral buildings by 2035	0	0	5	10	15		
Outcomes	Lifetime carbon savings from selected participants in C&I Carbon Challenge meet or exceed CEF program benchmark	\$22/ton	\$22/ton					
	Replication projects within portfolios (number of, in sqft)	0				1,000,000	5,000,000	10,000,000

**Table notes**

- a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.
- b. The CEF program benchmark is \$22/ton or less, so “exceeding” return-on-investment benchmark implies a lower cost per ton



## Appendix C | Initiative Outputs and Outcomes Summary

### Pay for Performance

	Indicators	Baseline (Before/Current)	2022 (cumulative)
			Target
Outputs	Number of participating aggregators	0	8
	Total number of projects implemented (by sector)	0	Residential: 7,000 Commercial: 5,575
	Number of Utility Administrators with an executed MOU participating in P4P pilot	0	3
	Number of data sets published on OpenNY	0	4
Outcomes	Number of additional market actors involved in P4P pilot (nonaggregator involvement such as financial institutions, subcontractors, etc.)	0	8
	Number of utilities committed to offering P4P programs postpilot	0	3

#### Table notes

a. A 0 (zero) denotes that the actual value is currently believed to be zero for baseline/market metrics.

## Appendix C | Initiative Outputs and Outcomes Summary

### Technical Services

	Indicators	Baseline (Before/Current)	2020 (cumulative)	2021 (cumulative)	2022 (cumulative)	2023 (cumulative)	2024 (cumulative)	2025 (cumulative)
			Target	Target	Target	Target	Target	Target
Outputs	Number of buildings participating in the pilots	0	26	26	26	55	55	55
	Number of qualified and active energy-focused firms (FlexTech Consultants and/or Multifamily Performance Partners)	39	49	49	49	82	82	85
	Number of case studies developed	0	2	2	2	40	40	50
	Number of best practice guides delivered	0	2,330	2,330	2,330	2330	2330	2330
Outcomes	Number of energy-focused firms participating in pilots	0	5	5	5	25	25	25
	Increase or maintain the rate at which clean energy technologies are adopted by participants	65%	65%	65%	65%	0.65	0.65	0.65
	Increase the rate at which clean energy technologies are adopted by non-participants through sharing of best practices and case studies	25%	30	30	30	0.3	0.3	0.3

#### Table notes

- a. A 0 (zero) denotes the actual value is currently believed to be zero for baseline/market metrics.
- b. The FlexTech Program has had the highest measure adoption rate (MAR) in the nation for individual cost-shared energy studies. Technical Services strives to maintain, and hopefully increase, this notable MAR through various cost-effective pilots.
- c. The FlexTech Program has a current spillover rate of 25%, this initiative will strive to improve this.